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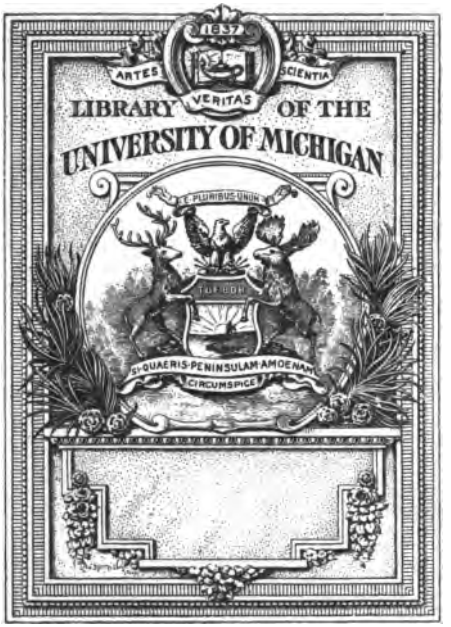
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Yours Truly
F. C. Larimore M.D.

THE OHIO

STATE MEDICAL SOCIETY.

TRANSACTIONS

OF THE

FIFTY-SECOND ANNUAL MEETING HELD AT

CLEVELAND, OHIO,

MAY 19, 20, 21, 1897.

EDITED BY

R. HARVEY REED, M. D.,

COLUMBUS, OHIO.

NORWALK, O.,
THE LANING PRINTING COMPANY,
1897.

THE FIFTY-THIRD ANNUAL MEETING

OF THE

OHIO STATE MEDICAL SOCIETY,

WILL BE HELD IN COLUMBUS,

MAY 4, 5, 6, 1898.

PREFACE.

In presenting the Transactions of the Fifty-Second Annual Meeting of the Ohio State Medical Society, your editor begs leave to call attention to the fact that he has deviated somewhat from the old time method of publishing the transactions, and has compiled the papers and discussions on similar subjects into chapters in order that those who are interested in looking up any particular subject, can, without delay, turn to the chapter on that subject and obtain all that is published without the necessity of hunting through the entire volume.

He has also prepared a table of contents by chapters, which will enable the reader, at a glance, to see what is contained in the transactions, and the chapter and page on which it occurs. In addition to these changes he has not only published the roll of members in alphabetical order, but he has prepared a roll of members by cities and towns, placing each in alphabetical order, thus enabling the reader to turn to any particular town in the state and not only ascertain the names of the members residing there but the exact number. He feels that this will perhaps surprise some of the cities and towns of this state and may lead to a healthy emulation on their part to increase their membership in order to have a favorable showing compared with many other cities and towns of their class. And that it will in a great many instances incite those that have no members, to identify themselves with this, the leading society of the state and one of the most important among the states of the Union.

In preparing the index, he has endeavored to so arrange it as to enable the reader to refer to the work of any particular member or other person who took part in the transactions and ascertain any subject he may have written upon, or to look up any particular subject and determine who wrote on it or took part in its discussion.

In order to avoid, so far as possible, errors, he has requested the printer not only to send him galley and form proofs, but also to furnish galley proofs to the author, in order that the latter might have an opportunity to correct any typographical errors that were chargeable to the printer. Whilst he does not claim to send out a work of perfection,

he has endeavored to take all practical precautions to avoid errors, notwithstanding it has delayed the publication of the work several months.

Before closing he begs leave to acknowledge the hearty co-operation of every member of the publication committee, and especially the secretary, who has given special attention to collecting the copy and placing it in proper shape for editing, a task which was not an easy one. It required considerable firmness, especially when it became necessary to omit papers which the committee, in their judgment, did not think of sufficient value to occupy space in such an important work.

In closing, your editor begs leave to say that he feels that it is the duty of each and every editor, who is entrusted with the important work of preparing and publishing the transactions of the greatest scientific body of the state of Ohio, to make each succeeding volume superior to its predecessor, and he leaves it to you to judge whether he has fulfilled what he believed to be his faithful duty.

R. HARVEY REED.

COLUMBUS, O., Dec. 1st, 1897.

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OFFICERS,

OHIO STATE MEDICAL SOCIETY.

WM. M. HUMISTON, M. D., Cleveland.....President.
JOHN A. THOMPSON, M. D., Cincinnati.....Secretary.
H. M. W. MOORE, M. D., Columbus.....Assistant Secretary.
JAMES A. DUNCAN, M. D., Toledo.....Treasurer.
T. CLARK MILLER, M. D., Massillon.....First Vice President.
GEORGE MITCHELL, M. D., Mansfield.....Second Vice President
D. H. BRINKERHOFF, M. D., Fremont.....Third Vice President.
E. H. HYATT, M. D., Delaware.....Fourth Vice President.

COMMITTEES.

Finance.

E. B. FULLERTON, M. D., 1893.
J. G. F. HOLSTON, M. D., 1895.
N. P. DANDRIDGE, M. D., 1894.
H. J. HERRICK, M. D., 1896.
J. E. COOK, M. D., 1897.

Ethics.

J. H. LOWMAN, M. D., 1893.
J. G. REEVE, SR., M. D., 1895.
F. C. LARRIMORE, M. D., 1894.
T. C. HOOVER, M. D., 1896.
DAN MILLIKIN, M. D., 1897.

Publication.

J. C. OLIVER, M. D., Chairman, 1893.
R. HARVEY REED, M. D., Secretary, 1895.
P. MAX FOSHAY, M. D., 1897.
J. P. SAWYER, M. D., 1894.
F. D. BAIN, M. D., 1896.
JOHN A. THOMPSON, M. D., *ex-officio*.
WM. H. HUMISTON, M. D., *ex-officio*.

Legislation.

J. F. BALDWIN, M. D., 1893.
GEO. A. COLLAMORE, M. D., 1895.
W. D. HAMILTON, M. D., 1894.
CHAS. GRAEFE, M. D., 1896.
J. A. KIMMEL, M. D., 1897.

Admission and Medical Societies.

C. D. NOBLE, M. D., 1893.
A. B. RICHARDSON, M. D., 1895.
W. C. CHAPMAN, M. D., 1894.
OSCAR HASENCAMP, M. D., 1896.
J. E. RUSSELL, M. D., 1897.

Special Committee on State Legislation.

N. P. DANDRIDGE, M. D., Chairman.

Committee of Arrangements.

E. J. WILSON, M. D., Chairman.
W. J. MEANS, M. D.
DICKSON MOORE, M. D.
ALBERT COOPERRIDER, M. D.
T. K. WISSINGER, M. D.

OHIO STATE MEDICAL SOCIETY.

At the Seventeenth Annual Meeting of the Ohio State Medical Society, the following resolution was adopted:

Resolved, That the publication of any address, prize, essay, or other paper, by this Society, is no evidence of its endorsement of the sentiments therein contained.

CHAPTER I.

THE MINUTES.

The Ohio State Medical Society convened in Grays' Armory, Cleveland, Ohio, May 19, 1897. The meeting was called to order at 10:30 A. M., Vice-president Dr. M. Stamm, of Fremont, in the chair.

The report of the Committee of Arrangements was made by Dr. Wm. H. Humiston, Chairman.

Dr. J. C. Oliver, Cincinnati, moved that the Secretary be empowered to employ a stenographer to report the proceedings of this meeting and that the usual rate of compensation be allowed him, the same to be paid out of the funds of the Society. The motion was seconded and carried.

Dr. J. C. Culbertson, Cincinnati, moved that the members of the Society desiring to go as delegates to the American Medical Association, and to state societies and foreign societies, personally make application on the floor for such certificates. Seconded by Dr. Rufus B. Hall, Cincinnati.

Dr. F. W. Langdon, Cincinnati, offered an amendment to the motion: That they be elected by the Society. This was accepted. The motion as amended was put and carried.

The Secretary stated that he had already received a number of applications for such credentials and read the list of those making application for the same.

After some discussion the list was laid over until the regular order on Thursday afternoon.

Dr. James A. Duncan, Treasurer, Toledo, read his report which was referred to the Finance Committee

Dr. Thomas Hubbard, Secretary, Toledo, made his annual report which was also referred to the Finance Committee.

The reports of standing committees were declared in order, but none of them were ready.

Upon motion by Dr. O. B. Campbell, Cleveland, the Society listened to the reports of cases. Dr. George W. Crile, Cleveland, made a preliminary report on the use of cocaine in major surgical operations. This was discussed by Dr. W. E. Wirt, Cleveland, Dr. W. C. Bunce, Oberlin, Dr. J. C. Oliver, Cincinnati, Dr. A. R. Baker, Cleveland, Drs. D. B. Smith and E. G. Carpenter of Cleveland, and closed by Dr. Crile.

The Secretary, Dr. Thomas Hubbard, stated that the number in attendance was considerably over 100, which is the minimum number required in order to secure a reduction in railroad rates. He had not investigated the subject, but it seemed that something might be done to get better rates for transportation and at much less trouble to the individual members.

Dr. A. R. Baker, Cleveland, moved that a committee of three, of which the Secretary be a member, be appointed by the Chair to investigate the matter. The motion was seconded by Dr. W. E. Wirt, Cleveland, and prevailed.

The annual report of the Committee on Publication was read by Dr. C. N. Smith, of Toledo, and referred to the Finance Committee.

The Chair appointed on the Committee on Transportation, referred to above, Drs. A. R. Baker, George W. Crile, Cleveland, R. Harvey Reed, Columbus, and the Secretary.

On motion by Dr. J. P. Sawyer, Cleveland, the Society adjourned until 1:15 P. M.

FIRST DAY, AFTERNOON SESSION, MAY 19, 1897.

The Society was called to order at 1:50 P. M., with President Dr. F. C. Larimore in the chair.

Prayer by the Rev. Dr. Sutphan.

Address of Welcome, Mr. J. G. W. Cowles, Cleveland.

Response to the Address of Welcome was made by Dr. G. A. Collamore, Toledo.

The minutes of the morning session were read by the Secretary and approved.

The Chair announced the presence of Dr. H. O. Marcy, of Boston, and extended to him the courtesies of the floor.

Continued report of the Committee of Arrangements was made by the Chairman, Dr. Wm. H. Humiston.

The Chair called the standing committees and filled the vacancies.

Committees as announced by President Larimore were as follows, those members whose names are in italics being appointed to fill temporary vacancies.

Finance: H. J. Herrick, M. D., *A. B. Walker, M. D., John McCurdy, M. D., B. B. Scott, M. D., Chas. Graefe, M. D.*

Ethics: C. S. Van Pelt, M. D., J. H. Lowman, M. D., F. C. Larimore, M. D., *G. H. Colville, M. D., S. S. Thorn, M. D.*

Publication: C. N. Smith, M. D., J. C. Oliver, M. D., J. P. Sawyer, M. D., R. Harvey Reed, M. D., F. D. Bain, M. D.

Legislation: C. E. Beardsley, M. D., J. F. Baldwin, M. D., G. A. Collamore, M. D., Chas. Graefe, M. D., *J. C. Culbertson, M. D.*

Admissions and Medical Societies: A. R. Baker, M. D., W. C. Chapman, M. D., John A. Thompson, M. D., *W J. Means, M. D., D. J. Merriman, M. D.*

The President also announced the following:

Committee on Nominations: C. F. Clarke, M. D., J. C. Oliver, M. D., J. E. Cook, M. D., F. D. Case, M. D., and E. H. Hyatt, M. D.

Report of the Special Committee on National Medical Legislation was made by Dr. L. B. Tuckerman, Cleveland, Delegate to Congress.

Dr. R. Harvey Reed, Columbus, moved the report be placed on the records of the Society and that the recommendations be adopted, and that a Committee of three with Dr. L. B. Tuckerman as Chairman be appointed by the Chair. Seconded and carried unanimously.

The Chair appointed Dr. L. B. Tuckerman, Cleveland, Dr. R. B. Hall, Cincinnati, and Dr. A. M. Bleile, Columbus, to serve as a special committee on National Medical Legislation.

The Secretary read the list of applicants for membership and the names of the Societies that had applied to become auxiliary to the State Society, which were referred to the Committee on Admissions.

READING AND DISCUSSION OF PAPERS.

"The Use of Pure Oxygen with Chloroform in Surgical Anæsthesia," Charles B. Parker, M. D., Cleveland. Discussed by Dr. Henry O. Marcy, of Boston, and closed by Dr. Parker.

"On the Causation of Epilepsy," was the subject of a paper read by A. M. Bleile, M. D., of Columbus. Discussed by Dr. R. Harvey Reed, Columbus, Dr. F. W. Langdon, Cincinnati, Dr. D. N. Kinsman, Columbus, Dr. E. G. Carpenter, Cleveland, Dr. John G. Spenzer, Cleveland, and Dr. Julian Harmon, Warren, the discussion being closed by Dr. Bleile.

A paper on "Pelvimetry—Its Value in Obstetrics," was read by F. S. Clark, M. D., Cleveland.

A paper on "The Preliminary Conduct of Intestinal Operations," was read by R. Harvey Reed, M. D., Columbus. Discussed by Dr. L. B. Tuckerman, Cleveland, Dr. C. S. Chamberlain, Kinsman, and closed by Dr. Reed.

Dr. Rufus B. Hall, Cincinnati, moved to accept the invitation of the Trustees of the Lakeside Hospital to visit that institution. Carried.

Adjourned at 4:30 P. M.

EVENING SESSION, FIRST DAY, MAY 19, 1897.

The session was called to order at 7:40 P. M., and the Society listened to the following addresses:

"Animal Tuberculosis and its Relation to Human Tuberculosis—Suggestions For Its Control," D. N. Kinsman A. M., M. D., Columbus.

"The Cure of Inguinal Hernia in the Male. Illustrated by the Stereopticon," Henry O. Marcy, A. M., M. D., LL. D., Boston, Mass.

Dr. R. Harvey Reed moved a vote of thanks to Dr. Marcy, which was seconded and prevailed unanimously.

It was also moved and seconded that Dr. Henry O. Marcy be elected an honorary member of the Society. Seconded and carried.

On motion, a vote of thanks was extended to Dr. D. N. Kinsman, Columbus, for his able and scholarly address.

Adjourned until 8:30 A. M.

Immediately following the evening session an informal reception was tendered the members by the Cleveland Medical Society at the Grays' Armory.

MORNING SESSION, SECOND DAY, THURSDAY, MAY 20, 1897.

The minutes of the previous session were read and approved.

Dr. N. Stone Scott, of Cleveland, read the first paper of the session, on "X-Ray Injuries." The paper was discussed by Dr. C. F. Clarke, Columbus.

A paper was read on the "Requirements for Admission to Medical Colleges," by C. F. Clarke, M. D., Columbus. Dr. Clarke's paper was discussed by Dr. W. E. Wirt, Cleveland, Dr. J. C. Culbertson, Cincinnati, Dr. Wm. C. Chapman, Toledo, and Dr. J. A. Kimmel, Findlay.

Following the discussion of his paper Dr. J. U. Barnhill, of Columbus, offered the following:

Resolved, That it is the sense of the Ohio State Medical Society that there should be a uniform standard of minimum requirements for entrance to the Medical Colleges of the State. That we approve of the action of the Ohio State Board of Medical Registration and Examination in requiring colleges to furnish satisfactory evidence of having complied with the requirements of the Association of American Medical Colleges.

This resolution was discussed by Dr. W. E. Wirt, Cleveland, Dr. J. C. Culbertson, Cincinnati, Dr. W. C. Chapman, Toledo, Dr. J. A. Kimmel, Findlay, Dr. J. U. Barnhill, Columbus, and Dr. G. A. Collamore, Toledo.

Dr. Collamore moved that the resolution be laid on the table. Carried.

Dr. Donald Maclean, of Detroit, Mich., an honorary member of the Society, was announced as a guest.

A paper on "Further Legislation in Medical Practice," was read by Julius Harmon, M. D., Warren. Discussed by Dr. W. E. Wirt, Cleveland, Dr. J. A. Kimmel, Findlay, Dr. Chas. A. L. Reed, Cincinnati, Dr. John McCurdy, Youngstown, and the discussion closed by Dr. Harmon.

Papers were read on the following subjects by their respective authors:

"The Medico-Legal Aspects of Purpura Hemorrhagica," Dan Millikin, M. D., Hamilton.

"The Aphasias and their Medico-Legal Relations," F. W. Langdon, M. D., Cincinnati.

"A Report on the Use of Antitoxin in the Treatment of

Diphtheria in Ohio," C. O. Probst, M. D., Columbus.

"Intubation in Laryngeal Diphtheria," J. A. Thompson, M. D., Cincinnati.

Discussion of Dr. Probst and Dr. Thompson's papers was participated in by Dr. J. F. Baldwin, Columbus, Dr. Dan Millikin, Hamilton, Dr. Thomas Hubbard, Toledo, and closed by Dr. C. O. Probst and Dr. J. A. Thompson.

"Impetigo Contagiosa," George A. Collamore, M. D., Toledo.

"The Surgery of Malignant Disease of the Orbit," Robert Sattler, M. D., Cincinnati.

Adjourned until 2:00 P. M.

SECOND DAY, AFTERNOON SESSION, MAY 20, 1897.

Called to order by President Larimore at 2:00 P. M.

Minutes of previous meeting read and approved.

"A Case of Intraperitoneal Gestation at Term—Operation after the Death of the Fœtus—Recovery," M. Rosenwasser, M. D., Cleveland. Discussed by Dr. W. J. Means, Columbus, Dr. J. F. Baldwin, Columbus, and closed by Dr. Rosenwasser.

REPORTS OF COMMITTEES.

Dr. C. A. L. Reed, Cincinnati, member State Board Medical Registration and Examination, made the report of the Committee on Legislation.

Dr. R. Harvey Reed moved that the report be placed on file and ordered printed. Seconded.

The motion was discussed by Dr. C. F. Clark, Columbus, Dr. John McCurdy, Youngstown, Dr. W. C. Marshall, Dayton and Dr. R. Harvey Reed, Columbus. The motion was then put to a vote and carried.

Dr. W. C. Chapman, Toledo, offered the following resolution, which, on motion, duly seconded, was adopted:

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Finance: H. J. Herrick, M. D., *A. B. Walker, M. D., John McCurdy, M. D., B. B. Scott, M. D., Chas. Graefe, M. D.*

Ethics: C. S. Van Pelt, M. D., J. H. Lowman, M. D., F. C. Larimore, M. D., *G. H. Colville, M. D., S. S. Thorn, M. D.*

Publication: C. N. Smith, M. D., J. C. Oliver, M. D., J. P. Sawyer, M. D., R. Harvey Reed, M. D., F. D. Bain. M. D.

Legislation: C. E. Beardsley, M. D., J. F. Baldwin, M. D., G. A. Collamore, M. D., Chas. Graefe, M. D., *J. C. Culbertson, M. D.*

Admissions and Medical Societies: A. R. Baker, M. D., W. C. Chapman, M. D., John A. Thompson, M. D., *W J. Means, M. D., D. J. Merriman, M. D.*

dent and Secretary-elect, and the Chairman of the Committee of Arrangements shall be authorized to fix the date of the next meeting. Seconded by Dr. John McCurdy and carried unanimously.

Dr. Thomas Hubbard, Toledo, moved the adoption of a resolution to the effect that the committee as named be granted the privilege of dividing the Society into two sections, if in their judgment the program and circumstances warrant it, which was seconded and carried.

Dr. W. E. Wirt, Cleveland, read a communication, in the form of a resolution, from the Ladies' Christian Temperance Union. On motion by Dr. J. E. Cook, Cleveland, the resolution was laid on the table.

The resignation of Dr. J. A. Thompson from the Committee on Admissions was read by the Secretary and accepted.

The following communication from the Cincinnati Academy of Medicine was read by the Secretary and referred to the Committee on Legislation.

Resolved, That it is the sense of the Academy of Medicine of Cincinnati, that it is unwise at present to agitate the question of establishing preliminary educational requirements for admission to medical schools until the state is prepared to establish like qualifications for all other professional schools.

W. E. SCHENCK, M. D.,
Secretary.

The President spoke of some letters embodying personal reminiscences that he had received from members. Dr. Humiston moved that these reminiscences be placed in the hands of the editor and published in the coming Transactions. Seconded and carried.

Dr. A. R. Baker, Cleveland, moved that Dr. H. M. W. Moore, Columbus, the Assistant Secretary, be made Treasurer *pro tem.* Carried.

Dr. W. H. Humiston, Cleveland, announced, that, owing to the weather, the lake ride was postponed indefinitely.

Dr. Oscar Hasenkamp, Toledo, was nominated to fill the vacancy in the Committee of Admissions created by the resignation of Dr. J. A. Thompson, Cincinnati.

The following papers were read by title and referred to the Committee on Publication:

"Shall we Operate through the Upper or Lower Canaliculus?" by S. C. Ayres, M. D., Cincinnati.

"The Medical Treatment of Inebriety without Restraint," by H. A. Rodebaugh, M. D., Marysville.

The following papers were read by their respective authors and referred to the Committee on Publication:

"Infectious Granulomata of the Nose, with report of two Cases," by William Lincoln, M. D., Cleveland.

"Hot Air in the Treatment of Chronic Joint Affections," by W. E. Wirt, M. D., Cleveland.

The paper of Dr. Wirt was discussed by Dr. N. P. Davidson, Hilliards, Dr. R. Harvey Reed, Columbus, and closed by Dr. W. E. Wirt, Cleveland.

Committee on Admissions reported favorably on membership and auxiliary societies which report was adopted.

The Committee appointed to investigate as to eligibility of Vice Presidents having reported it was moved to proceed to the election of one Vice President. Seconded and carried.

Dr. R. Harvey Reed moved Dr. D. H. Brinkerhoff, Fremont, be elected to fill vacancy in the office of Third Vice President. Seconded and carried.

A report of the Committee on Finance was made through Dr. H. J. Herrick, Cleveland, on an appeal for aid from the family of a deceased member.

On motion by Dr. R. Harvey Reed, the report was adopted.

A paper on "The Cutaneous Stigmata of Hysteria," was read by Charles J. Aldrich, M. D., Cleveland.

The paper was discussed by Drs. W. T. Corlett, and L. B. Tuckerman, of Cleveland, and closed by the essayist.

"Notes on the Etiology of Inflammation of the Accessory Sinuses of the Nose," was read by John M. Ingersoll, M. D., Cleveland.

Discussed by Dr. C. W. Smith, Dr. Frank E. Bunts, and Dr. W. T. Howard, Cleveland.

Dr. J. A. Thompson, Cincinnati, moved that all papers on the program, where an opportunity will not be afforded for their reading, be read by title and referred to the Committee on Publication. Seconded and carried.

A paper on "Typhoid Fever," by J. E. Woodbridge, M. D., Cleveland, was read and discussed by Dr. John McCurdy, Youngstown, Dr. H. G. Jenner, Dayton, Dr. L. B. Tuckerman, Cleveland, Dr. Chas. S. Chamberlain of Kinsman, Dr. C. F. Hoover, Cleveland, Dr. R. H. Montgomery, Youngstown, Dr. R. C. Faucett, N. Jackson, and closed by Dr. Woodbridge.

Dr. R. Harvey Reed, Columbus, offered the following resolution which was unanimously adopted:

Resolved, That the Ohio State Medical Society in convention assembled extend a vote of thanks to the medical profession and the citizens of Cleveland for their untiring efforts in making the fifty-second annual meeting one of the most successful in the history of the Society; also, for their most hearty and cordial entertainment and hospitality extended to its members.

A resolution was also read by Dr. R. Harvey Reed, offering an amendment to the Constitution, changing the initiation fee from three dollars to one dollar, and is as follows:

"Amendment to Article III, Section 3, Constitution, to make it read, the sum of one dollar ($1.00) instead of three dollars ($3.00)." This according to the constitution was laid over one year.

Adjourned.

After the reading and adoption of the minutes of the last session, President Larimore closed the fifty-second annual meeting of the Ohio State Medical Society with the following remarks:

Gentlemen: In the aid you have so generously given me in discharge of the duties that pertain to this office as well as the courtesy you have formerly shown me I am profoundly grateful and now wishing you each a safe return to home and patients, it only remains for me to declare the fifty-second session of the Ohio State Medical Society adjourned without day.

THOMAS HUBBARD,
Secretary.

CHAPTER II.

REPORTS OF OFFICERS, STANDING AND TEMPORARY COMMITTEES.

ANNUAL REPORT OF SECRETARY.

The active co-operation of auxiliary societies is apparent from the small number of delinquents, and there is reason to expect that we may soon claim as auxiliary every county and local society in the state. None have been reported defunct during the past year. The large number of societies applying for admission this year, and also the very rapid increase of permanent members prompt me to repeat the suggestion offered in my report last year. A list of societies applying to become auxiliary should be published in the annual program. The Committee on Admissions are often compelled to assume that any member of an auxiliary society endorsed by any two members of the State Society is eligible to election. The State Society must make every effort to maintain a standard for auxiliary societies, and to the end that full opportunity for investigation and formal protests should be allowed.

The total membership at this time is 865.

The auxiliary list numbers a membership of nearly 3,000, being about half of the total number of registered regular physicians.

ROLL OF DECEASED MEMBERS.

The roll of deceased members of State Society reported to the Secretary, for the fiscal year ending with this meeting is as follows:

Dr. E. B. Stephens, Lebanon.
Dr. W. R. Bricker, Shelby.
Dr. Wm. Caldwell, Fremont.
Dr. Joel Pomerene, Mt. Hope.
Dr. Albert Hoover, Akron.
Dr. T. J. Barton, Zanesville.
Dr. A. E. Bell, Zanesville.
Dr. Orin M. Ward, Duncan's Falls.
Dr. Jas. D. Robinson, Wooster.
Dr. F. W. Entrekin, Findlay.
Dr. Elisha Griswald, Sharon, Pa.

About thirty members of auxiliary societies have been reported deceased. Obituary notices have been forwarded for nearly all of the above and will be placed at the disposal of the committee on publication.

Very respectfully submitted,

THOMAS HUBBARD,
Secretary.

ANNUAL REPORT OF THE TREASURER.

TOLEDO, O., May 19, 1897.

In presenting my fourth annual report as Treasurer, I repeat what I said a year ago, that the Society is out of debt and paying on demand. One week after the adjournment of the last meeting at Columbus a statement of account accompanied by a stamped and addressed envelope was sent to every member who had not paid his dues at the Columbus meeting.

On November 16th, 355 accounts were mailed. On March 1st a statement of account was mailed with a circular letter which read:

"THIRD NOTICE."

My Dear Doctor: You may find in your office two stamped envelopes addressed to me. One was sent to you June 12th, the other November 16th. With each was a statement of your account with the Ohio State Medical Society.

To-day, while it is fresh in your memory, enclose a two dollar bill, and mail it.

Half of the society have paid in that manner—nothing has been lost to my knowledge.

All accounts remaining on the books March 20th, will be sent to the local bank for collection—without further notice.

Respectfully,

Toledo. JAMES A. DUNCAN.

On March 20th I sent to the various banks all over the state 180 bills for collection. There remain at the present date 88 unpaid accounts including 32 which have not paid for 1895. Total amount unpaid, $232. Six hundred and eighty-seven members paid 1896 dues—making a total of 775 permanent members—which with 48 life members, 20 honorary members, and 8 non-resident members, makes a total of 865 members.

FINANCIAL STATEMENT.

GENERAL.

1893—Receipts	$2,074 19	
Expenditures		$2,074 19
1894—Receipts	1,596 95	
Expenditures		1,596 95
1895—Receipts	1,868 00	
Expenditures		1,788 09
1896—Receipts	1,628 21	
Expenditures		1,708 12
Grand total	$7,167 35	$7,167 35

RECEIPTS, 1896.

Balance on hand	$ 79 91	
Initiation fees	200 00	
Dues, membership	1,428 00	
Advanced by Treasurer	21	
		$1,708 12

EXPENDITURES.

Dr. Thomas Hubbard:			
Salary, Secretary	$125 00		
Postage	30 00		
Printing and stationery	111 84		
		$266 84	
Dr. James A. Duncan:			
Salary, Treasurer	125 00		
Postage	47 00		
Printing and stationery	7 25		
Exchange, bank collections	8 80		
			$188 05
Express charges			96 93
Stenographic report, convention, '96			50 00
Central Traffic Association			11 00
Dr. H. M. W. Moore, Ass't Sec'y			6 30
J. J. Noland			25 00
Dues refunded			8 00
Legislative Committee			200 00
Publication of transactions, 1896			856 00
		$1,708 12	$1,708 12

Respectfully submitted,

JAMES A. DUNCAN,
Treasurer.

ANNUAL REPORT OF THE COMMITTEE ON FINANCE.

To the Ohio State Medical Society:

Your committee have examined the books and vouchers of the Secretary and Treasurer and have the honor to report the same correct.

The summary of receipts is	$1,707.91
Expenditures	$1,708.12
Balance due Treasurer	.21

We would respectfully recommend the same assessment of $2.00 per member for the ensuing year.

H. J. HERRICK, *Chairman.*
JOHN MCCURDY,
A. B. WALKER,
BALDWIN B. SCOTT,
CHARLES GRAEFE.

SUPPLEMENTARY REPORT ON AN APPEAL FOR FINANCIAL AID FROM THE WIDOW OF A DECEASED MEMBER.

As a Society the Committee are of the opinion that it is not wise to present such appeals to the Society, but would refer all such cases calling for financial aid and sympathy to the individual members of the profession.

H. J. HERRICK, *Chairman.*
JOHN MCCURDY.

REPORT OF COMMITTEE ON ADMISSIONS AND MEDICAL SOCIETIES

BY

A. R. BAKER, M. D., CHAIRMAN, CLEVELAND, OHIO.

NEW MEMBERS ELECTED.

Geo. E. Malsbary	Cincinnati.
C. W. Smith	Cleveland.
M. J. Longsworth	St. Mary's.
E. L. Leonard	Democracy.

Jos. Wilson Darrah.....Martin's Ferry.
Robert G. Steel .....Melmore.
Mary Jordon Finley.....Mansfield.
R. D. Reynolds .....Cleveland.
James Owen Howells.....Bridgeport.
Joseph Blickensderfer .... New Philadelphia.
Wilford White.....Ravenna.
H. E. Blazer ....Salineville.
Albert G. Spurney .....Cleveland.
J. M. Ingersoll .....Cleveland.
G. H. Feil.....Cleveland.
Geo. D. Upson.....Cleveland.
Wm. E. Bruner ....Cleveland.
Fred. L. Johnson ..... Worthington.
Fred. K. Smith .....Cleveland.
J. T. Hobson ....Cleveland.
Thos. Martin.....Cleveland.
Irene Hardy.....Massillon.
E. H. Rea ....Adena.
Curtis L. Fox .....Kingsville.
Walter F. Church .....Gibsonburg.
J. G. Stuckey .....Walnut Creek.
Sam'l Blackburn Ellis.....Dayton.
J. J. Wall ....Mallett Creek.
Hunter Robb.....Cleveland.
J. C. Buttemiller .....Cincinnati.
Chas. F. House .....Painsville.
Raymond E. Whelan .....Youngstown.
Fred C. Taylor.....Cleveland.
B. E. Sayer ....Cleveland.
Geo. A. Hollister.....Toledo.
Henry G. Jenner .....Dayton.
Jno. H. Belt .....Cleveland.
B. C. Hendershot .....New Philadelphia.
Mary M. Battles .....Ashtabula.
J. G. Bigham .....Millersburg.
D. S. Perkins .. ..Cleveland.
Jno. E. Russel .....Mt. Vernon.
Frank S. Pomeroy .....Chardon.
Lillian G. Towslee .....Cleveland.
A. B. Howard.....Cuyahoga Falls.
W. F. McLean.....Elyria.
H. C. Rutter.....Gallipolis.

W. S. James .....Cleveland.
W. E. Linden .....Brooklyn.
W. E. Thompson ..... St. Clairsville.
Lincoln A. Yocum .....Wooster.
Yeatman Wardlow.....Columbus.
R. J. Marshal .....East Liverpool.
Geo. Mitchell ... .Mansfield.
Daniel P. Shea.....Fredricksburg.
A. H. McCullough..... Mansfield.

SOCIETIES ADMITTED TO AUXILIARY MEMBERSHIP AT THE 52ND ANNUAL MEETING.

Jackson County Medical Society—
President, G. A. Ewing, M. D., Jackson.
Secretary, C. M. Woodrow, M. D., Wellston.

Perry County Medical Society—
President, P. H. Gordon, M. D., Junction City.
Secretary, J. G. McDougal, M. D., New Lexington.

Defiance County Medical Society—
President, Charles E. Slocum, M. D., Defiance.
Secretary, John J. Reynolds, M. D., Defiance.

Stark County Medical Society—
President, L. B. Santee, M. D., Marlboro.
Secretary, R. J. Pumphry, M. D., Massillon.

Morrow County Medical Society—
President, H. S. Green, M. D., Mt. Gilead.
Secretary, F. C. Griffis, M. D., Mt. Gilead.

Pickaway County Medical Society—
President, G. A. Wilder, M. D., Circleville.
Secretary, A. W. Holman, M. D., Circleville.

Academy of Medicine of Mansfield—
President, Geo. Mitchell, M. D., Mansfield.
Secretary, Wm. Bushnell, M. D., Mansfield.

REPORT OF COMMITTEE ON PUBLICATION.

The Committee on Publication beg leave to report as follows :

Specifications for printing the Transactions for 1897 were submitted to printing houses in Columbus, Cincinnati,

Cleveland, Toledo and Norwalk, and bids solicited from them. Six bids have been received, the lowest being from The Laning Printing Co., of Norwalk, and we recommend that the President and Secretary of the Committee on Publication be authorized to execute a contract with said company upon their filing a bond for the proper performance of the work as required by the specifications.

The Committee recommends the appointment of Dr. R. Harvey Reed, Columbus, as Editor of the Transactions and that the usual fee of One Hundred Dollars be paid him for his services.

We wish to call attention to the by-law which requires the authors of all papers to leave their manuscript with the Secretary of the Society before the close of the meeting. This is desirable, that papers on similar subjects may be properly grouped in the Transactions.

We wish to suggest, as a plan for increasing the value of the discussion on papers, that authors furnish the Secretary of the Society with a very brief synopsis of their papers at least two weeks before the meeting of the Society and that such synopses be printed on the program.

All of which is respectfully submitted.

C. N. SMITH, *Chairman.*
F. D. BAIN,
R. HARVEY REED,
J. C. OLIVER,
J. P. SAWYER, *Secretary.*

REPORT OF SPECIAL COMMITTEE ON TRANSPORTATION.

Your special Committee on Transportation beg leave to report that they have carefully considered the question and in view of the existing rules regulating the Passenger Traffic Associations regarding special rates, would recommend that a special committee of not less than two be appointed to meet with the Traffic Association of this district and place the matter before them in person as special dele-

gates from this Society, and make every effort to secure the best special rates possible on all lines passing through or operated within the State.

As it will be necessary for this Committee to go to Chicago to meet the Traffic Association, it is further recommended that the necessary expenses of the Committee be paid by this Society.

GEO. W. CRILE, *Chairman*,
R. HARVEY REED, *Secretary*,
THOMAS HUBBARD.

On motion the report was laid upon the table.

REPORT OF THE COMMITTEE ON LEGISLATION

BY

CHARLES A. L. REED, M. D., CINCINNATI.

A member of the Ohio State Board of Medical Registration and Examination.

Gentlemen: The report to be made by the Committee, so far as the work accomplished during the past year is concerned, must consist largely of the report of the work of the State Board of Medical Registration and Examination.

Therefore, in lieu of a report, I take pleasure in presenting to you, briefly as possible, a summary of what has been done and what has been accomplished under the law which has been enacted largely through the instrumentality of this organization.

Let me say to you, to begin with, that the work of inaugurating the specific functions for which this Board was created, was tedious. There is a great deal to be done in getting such a Board in working order. The Board met persuant to the summons of the Governor, and a once inaugurated work looking to its proper operation. This involved several things: the equipment of an office, the selection of a secretary, the printing of blanks, the printing of stationery, and the production of plates for the certificates, a copy of which has been received by each of you. This consumed considerable time and it was, therefore, quite

sixty days before the actual work of registration began. To facilitate this work the Board directed that the work be done in each of the larger cities. As a result of that policy we were enabled, about sixty days after registration began, to issue almost 5,000 certificates to practitioners. When it is remembered that the name of each applicant was considered by that Board, you can understand something of the magnitude of the task resting upon its shoulders. The Board considered that its first duty was to effect registration and determine who were entitled to work under the new law. First preference was given the graduates, and then the legal practitioners. Here it was confronted by the anomaly of a law imposed by the Supreme Court, that a man who violated the law for ten years, by virtue of that fact became a law-abiding citizen. That being the decision of the Supreme Court, we had to bow to it, and the conduct of the Board was shaped accordingly. The hearing of these ten-year cases was a tedious matter. When I tell you the Board has been in session long enough to give personal hearing to over 40 contested cases, and when I tell you that those proceedings were conducted with the formality of a trial in law, the Board was represented by its attorney and the contestant was represented by his attorney, and we had to give hearing to witnesses and sometimes to take testimony both in and outside the State, as far east as Maine and as far west as Colorado, you can understand that necessarily the work has been more or less slow. It has been time killing, time consuming, and we of the Board feel we have not been able to accomplish everything we wished to accomplish up to this time, and regret that we are as yet unable to come to you with the report of a more complete task.

Now, after having registered those who were clearly entitled to registration, first those who were graduates, next those who were the legal practitioners, we came to those who were the open violators of the law. Prosecutions

under the law had to be conducted with considerable circumspection. We thought our preliminary cases should be well chosen and vigorously prosecuted, that the law might not be defeated. Therefore, we moved slowly and with as much discretion as we were able to command. I believe the result of these prosecutions will meet with your approval. The only feature in which they do not meet the approval of the Board is that by force of the brevity of time, by force of circumstances, which embraces not only time but a knowledge of facts and the slow operation of the courts, the only feature unsatisfactory to the Board is that we have not been able to institute and carry on a larger number of prosecutions. But the war is at hand and it is being pushed.

Mr. President: It affords me great pleasure to say to you that with practical unanimity the courts, and they are essentially as yet the lower courts, have rendered decisions sustaining the constitutionality of our law. They have in a number of instances made this specific. The law has not yet gone to the court of final jurisdiction, namely, the Supreme Court of the State of Ohio. Cases are pending that we feel will reach the Supreme Court. Pending that fact we feel it is not wise for us to push these cases until we have the constitutionality passed upon and either confirmed or denied. However, in every case of flagrant violation of the law we have pushed the prosecution. I want to speak of one or two facts in connection with the prosecution under this law.

The difficulty of making out cases under this law are more than one would at first infer. Under the decisions made by the courts and the advice of our retained counsel, we found it best before proceeding in cases to make sure, first, that we have a *bona fide* prescription; next, the payment of a fee, and that the individual holds himself out in the community as being a doctor. It is rather unfortunate that in the framing of the law, those who were to consider

themselves practitioners were to append after their name M. D. or M. B. Lawyers engaged have simply advised their clients to drop the M. D. and use Dr. in front of their names, because in all criminal prosecutions it is held that there must be the strictest construction of the law, itself. That holds that the letters M. D. used after the name, if not registered, would imply a violation of the law, whereas the employment of Dr. before the name would not be a violation of the law. Now, you can readily understand from this interpretation of the law, there is extreme difficulty in making out cases, and the fact we have been able to make out twenty-two cases up to date is to my mind satisfactory.

There is much work remaining for the Board. It is its sincere regret that in carrying out the commission entrusted to its care, it has not been able, in the time alloted to it, to bring to the bar of justice all who should have been arraigned. The delays of the law are proverbial, and when those are accompanied by the necessary delays in getting information and instituting proceedings, it becomes even more pronounced.

I feel I have now occupied considerable of your time, Mr. President, but we have felt that it was important, that it was courteous to bring some statement of our work before this assembly. I only regret, Mr. President, that the prolonged illness of our distinguished and efficient President of the Board, Dr. Coleman, prevents his presence here and his participation in these proceedings. He has been made ill by his zealous devotion to the execution of this task, and he has been confined to his house practically two or three months as the result really of physical indiscretions perpetrated in the interest of carrying out this work of the Board. But, notwithstanding that fact, I am commissioned by him and by the members of the Board, to express to you, and through you to the Society, our cordial appreciation of the warm and generous support

which we have received from the profession of the State with marked unanimity. In every instance the members of this Society have upheld its work and helped it in carrying out the task assigned to it, and for that cooperation I desire here to extend its acknowledgment and profound thanks.

REPORT OF TEMPORARY COMMITTEE ON VIVISECTION.

Mr. President, Ladies and Gentlemen of the Ohio State Medical Society:

Your Committee appointed to represent this Society in furtherance of the passage of H. B. 8777, providing for medical inspection of immigrants at ports of embarkation by officers of the United States Marine Hospital Service, as was done during the cholera epidemic in '93, in order that immigrants in transit and the public at large should receive efficient protection against the importation of infectious disease; and to protest in the name of the Society against the passage of S. B. 1552, currently known as the Gallinger anti-vivisection bill, beg leave to submit the following report:

Last September, the American Humane Association held its 20th annual session in the City of Cleveland. Much of the time of the Association was consumed in discussing the question of vivisection from the usual standpoint of the Anti-vivisectionists and a report of a special committee recommending the passage of S. B. 1552 was adopted. Through the courtesy of the Association, and through the assistance of Dr. Geo. W. Crile, himself a member of the Humane Association, your committee was allowed the privilege of the floor, and the Association adopted the following supplementary resolution:

"*Resolved*, That in accordance with a suggestion made by a member of the American Medical Association, here present, a committee of three be appointed by this Associa-

tion to act with a similar committee which the American Medical Association will be asked to appoint at its next annual meeting, this joint committee to make a report to both Societies on the legislative regulation of medical and physiological experimentation upon living animals."

By the adoption of this resolution the practical concession was made that the Humane Societies had acted hastily in pushing legislation of this character without at least due consultation with the great National and State Medical Organizations. This action on the part of the National Organization of Humane Societies gave your committee the best of grounds, aside from the obvious demerits of S. B. 1552, for asking the Senate to delay action on the measure. In accordance with the advice of Hon. T. E. Burton of the 21st Ohio district, your committee went to Washington about a week before the holiday recess. The scientific and medical bodies and institutions of higher education of that city were found in active and energetic opposition to the measure, having organized a legislative committee consisting of the following named members:

Dr. S. C. Busey, President, representing the D. C. Medical Society.

Dr. G. M. Sternberg, Surgeon-General U. S. A., representing the Biological Society.

Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, representing the Agricultural Department.

Dr. Walter Reed, U. S. A., representing the Medical Department of the U. S. Army.

Dr. D. S. Lamb, representing Howard University.

Dr. C. W. Stiles, representing the Georgetown Medical School.

Dr. E. A. de Schweinitz, representing the Columbia Medical School.

Dr. H. N. Stokes, representing the Chemical Society of Washington.

Dr. W. M. Sprigg, representing the National University.

The able protest of these gentlemen, a protest which leaves little to be said on the merits of the question, was presented by Senator Cockrell of Missouri, and is embodied in Senate Document No. 31, 54th Congress, 2nd Session. This document, by reason of its thorough review of the extent to which scientific medicine has been advanced by reason of physiological experimentation, and human suffering ameliorated and human lives saved thereby, constitutes a valuable addition to medical literature. Every member of this Society would do well to ask his representative in Congress to send him a copy, and to read it. The Department of Agriculture was also, through its Assistant Secretary, Chas. W. Dabney, Jr., protesting vigorously against the bill as calculated to greatly hamper that department in its investigations of disease. This protest is embodied in Circular No. 4, U. S. Dep't of Agriculture, and may be obtained on application to that department. Unfortunately, however, these gentlemen in Washington, able as they are, energetic as they are, are voteless, and, therefore, wholly devoid of that influence which resides in a vote and the power to influence votes. It is for this reason that our professional confreres in the District need the active support of the outside profession, and the President of the Committee, Dr. Busey, speaking for the Committee expressed his hearty thanks to this Society that enough interest had been felt to send a special committee instead of following the usual custom of sending a petition, destined in all likelihood to find its way at once into the sarcophagus of petitions—the pigeon-hole. Notwithstanding the disadvantages under which it has labored, the Medical Profession of the District of Columbia has accomplished much. Their persistence has been rewarded by the passage of a Medical Practice act, not perfect by any means, but like our own law, a good starter. Had it not been for the efficient work of their legislative committee, in keeping track of the action of the various medical and scientific organizations and see-

ing that these resolutions were not forgotten or ignored, but pressing them where each would count most effectively, the 'Gallinger bill would, in all probability, already have become a law. Senator Gallinger's Committee had reported in favor of the bill. The effort of its friends was to bring it to a vote, confident that, backed as it was by the favorable action of the committee, it would have votes enough to carry it in the Senate. The thing to be done, therefore, was to prevent a vote if possible, and to this end your committee acted in co-operation with the District Committee. The status of the Senate Calendar was such that no bill could come up out of its order except by unanimons consent. The District Committee caused copies to be made of the supplementary resolution adopted by the American Humane Association, and had these copies placed in the hands of every Senator. Senator Cockrell was in accord with the sentiment of the Missouri State Medical Society. Senator Brice was absent at the time, but Senator Sherman pledged his best efforts to see that the wishes of this Society were carried out. The measure failed of unanimous consent and did not come to a vote before the 54th Congress expired by limitation. The bill has been reintroduced, however, in the present Congress. Senator Gallinger's Committee has again reported it back to the Senate recommending that it pass, and the medical profession should in no wise relax their vigilance or it will pass. While the present bill has been modified in certain minor particulars, the main objections still obtain viz:

1. Requiring practitioners of medicine to obtain special license in order to do such vivisection or physiological experimentation as may be necessary to their successful practice of the healing art.

2. Placing the power to grant or refuse licences in the hands of men who may be and are likely to be without scientific knowledge or training.

3. Placing physiological experimentation, even when done under licence, subject to the inspection of men who may know, and are likely to know next to nothing about the importance of the questions to be determined by investigation or the processes necessary to their determination.

In short, while professing to favor legitimate scientific investigation, the new bill, like the old one, so hampers physiological study in the District, that rather than undertake it with the risk of running afoul of fine and imprisonment, unless one retain a first-class lawyer by the year as English physiologists have to, in order to protect themselves against persecution. The medical profession in Washington will be compelled to do as the law practically compels practitioners to do in England viz: Refrain from experiments on animals, and test the relative merits of mooted procedures on the human sufferer first.

H. B. 8777, providing for the inspection of immigrants at points of embarkation by officers of the U. S. Marine Hospital Service, had been referred to the Committee on Interstate and Foreign Commerce, of which Mr. Hepburn of Iowa was chairman. Your committee was accorded a hearing of upwards of an hour, and a vote was passed that the Committee on Commerce recommend the bill for passage. It was also voted that thanks be extended to the Ohio State Medical Society for the interest taken in this question of public sanitation, and assurances were given of a cordial reception by the committee of any further suggestions the Society might see fit to offer on this or other medical questions coming before the committee, and that any representative which the Society might see fit to send hereafter would be gladly accorded an attentative hearing. Owing to the crowded condition of the House Calendar, the bill could not be brought to a vote, but the principle involved therein is finding increasing support among the members. It was introduced again by Mr. Burton at the opening of the present Congress, and as soon as the Committees of the

present House are appointed it will doubtless be referred again to the same Committee.

There was still another matter submitted to your committee which is best explained by the accompanying letter sent to the secretary of this Society by Dr. James D. Spencer, President of the Medical Society of the State of New York.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.
OFFICE OF THE PRESIDENT,
59 WASHINGTON STREET, WATERTOWN, N. Y.

May 16, 1896.

THOMAS HUBBARD M. D., Sec'y Ohio State Medical Society,

Dear Doctor: As President of the Medical Society of the State of New York, I would say that we have found it of material advantage having the annual meeting in Albany during the session of the legislature; an advantage which has resulted in the enactment of excellent Health and Medical Education Laws for the state of New York.

It has occurred to me that a similar advantage could be realized by the country at large, by the organization of a small delegated body, representing each State Medical Society in the United States; such body to meet at Washington for a brief period once each year, during the session of Congress.

These meetings could be arranged subject to call and held during the pendency of important legislation, relative to the various medical branches of the public service and of the medical profession, also for advice and consultation regarding State Medical Society affairs.

You can readily see the advantage it would be to each State Medical Society.

I therefore ask you to kindly co-operate with this Society and with the Medical Societies of other States, by appointing a delegation of three, with three alternates to attend a

conference and formulate a definite organization, to be held sometime during the ensuing year; probably next February or March at Washington, D. C.

Kindly advise me of any action your Society may take, together with the names and addresses of such delegates and alternates as may be chosen.

As soon as we receive returns from the other State Societies which are yet to meet, a call will be issued.

Very sincerely,

JAMES D. SPENCER,
President.

A. WALTER SUITER, M. D.,
Chairman, Committee on Legislation, Medical Society, State of New York.

To this letter your committee replied suggesting that the conference be called some time in April. At that time it was expected that there would be an extra session, but it was not expected that the Chairman of the House fail to appoint committees, and, it is to be presumed, to the latter fact it is due that no meeting of the conference has as yet been called by the delegates appointed by Dr. Spencer and designated in the following reply to the letter of your committee.

February 3, 1897.

L. B. TUCKERMAN, M. D.

My Dear Doctor: In answer to yours of 31st ult., our Society took definite action at our meeting just passed, and I am authorized to appoint a committee of ten. We expect to interest a few State Society Workers in those States that have not already acted on the suggestion and call a meeting as you suggest, sometime in April.

I have not fully completed my committee, but have appointed Dr. Seneca D. Powell, 12 W. 40th St., N. Y., Chairman, and A. Walter Suiter, M. D., Herkimer, N. Y., Secy. The other members decided on are Drs. D. B. St.

John, Roosa; Joseph D. Bryant, New York; A. Van De Veer H. Binder, Albany; Wm. Warren Potter, Buffalo, and probably Frank Foster (*N. Y. Med. Journal*), and one other not decided, besides myself. I think you will say a very strong committee.

Dr. Powell is the newly elected President, and Dr. Surter our chairman of the Committee on Legislation. I have corresponded some and talked with Dr. Chas. A. L. Reece, of Cincinnati, and Dr. Coleman, of Columbus, and if you notify them I think they will meet with us and become incorporators, after the organization is incorporated. I should favor the admission of none except delegates from State Societies. In the incorporation it is desirable to have as many states as possible represented by a few of the most prominent workers in the various states, men of influence in their state societies, but it will not be required that they shall come as delegates, though as far as possible this is desirable. Any that you know in your State Society, also in other state societies, that you can interest in this good work kindly use your influence.

I will forward your letter to Dr. Powell, then to Dr. Suiter, and we will keep you posted, and any suggestions from you will be thankfully received.

Very sincerely,

JAMES D. SPENCER.

L. B. TUCKERMAN, Cleveland, O.

In conclusion, your committee would recommend that the following resolutions be adopted, and that a copy be forwarded to each member of the Ohio delegation in both House and Senate.

Resolved, That it is not conducive to public welfare, nor to the normal progress of the healing art, that legally qualified practitioners of medicine and surgery should be prohibited from making, or hampered by cumbersome and obstructive restrictions in making such experiments upon

living animals as are in their judgment necessary to the proper treatment of their patients, or to the improvement of methods in the treatment of disease.

Resolved, That the general laws in force prohibiting wanton cruelty to animals are amply sufficient to suppress any abuses that may arise in the exercise of this liberty on the part of the members of the medical profession.

Resolved, That we request our representatives in the House and Senate to use every effort to prevent the passage of the bill known as S. B. 1552, 54th Congress, or any other bill embodying similar provisions.

Resolved, That in our judgment H. B. 8777, 54th Congress, embodies a wise regulation of immigration and is calculated to prevent the spread of infectious and contagious diseases by importation.

Resolved, That we urge our representatives in Congress to earnestly endeavor to secure the enactment of its provisions into law.

Regarding the proposition of the Medical Society of the State of New York your committee cannot but regard the plan, in the main, a wise one. A body of delegates not so large as to be unwieldy, but large enough to permit of a division of labor, so that every member of Congress could be personally interviewed by a medical representative from his own State; such a body, pushing, not too many things at a time, but pushing one or two things strongly and persistently till they have become enacted into law, would be likely in a few years to accomplish much good and do a great deal toward "taking away our reproach" in the matter of National sanitary legislation. It is questionable, however, whether actual incorporation as proposed in Dr. Spencer's second letter would add to the influence or efficiency of the body. An annual conference of delegates, freshly chosen from the several States, getting together with the District Medical Committee that has already done such effective work under so great disadvantage, settling

on the one or two things that they propose to push that year, going as individuals to the Congressmen and Senators from their respective states and telling them what we want and why we want it, sending also, perhaps, representatives before the proper committees, adjourning and leaving the District Committee to follow up the work, and you may rest assured, gentlemen, that said Committee will follow it up with a right good will; such a body, so constituted, would seem likely to carry more weight with Congress than any permanently incorporated body no matter how able its membership.

There are good many things we of the medical profession ought to demand from Congress, not so much in our own behalf as in behalf of the welfare of the people of these United States. We ought to demand the respect of Congress. It ought to be as impossible for a Senator to introduce a bill, engineer it through a committee and put it on its passage against the unanimous protest of the Medical Association, as it would be to get a bill out of a committee against which the bar associations had made united protest. He were a bold senator who would even introduce a measure against which the bar had protested as solidly as the medical profession has against the Gallinger bill. How is it? Whose fault is it that we carry less weight than the legal profession? There is the Bureau of Animal Industry—its laboratories fully equipped with every facility for producing on a large scale, tuberculin, anti-tuberculous serum, diphtheria anti toxin, tetanus antitoxin, the immunizing inoculation for rabies, etc. Why is it? Whose fault is it that the facilities of these laboratories are not at the service of the eleemosynary institutions of the whole country upon requisition through proper authorities? We ought to have an ideal Medical Practice Law in the District of Columbia—an act that should serve as a model for the whole country. But why enumerate further? What we ought to have we can have

if we make our weight felt. It is doubtful, however, if we can do more in this present Congress than prevent the passage of an anti-vivisection bill hostile to the advance of scientific therapeutics, and to secure the passage of a law providing for proper medical inspection of immigrants at European ports. To the end that what can be done, may be done, your committee would recommend as follows:

That this Society accept the proposition of the Medical Society of the State of New York and choose a delegation of not to exceed three persons to represent this Society at the proposed conference.

That this delegation take occasion to interview the members of the Ohio Delegation in Congress and to communicate to them our sentiments relative to the Gallinger anti-vivisection bill, and the Burton bill providing for medical inspection of immigrants at ports of embarkation.

That the necessary travelling expenses of the delegation be borne by this society.

Respectfully submitted,

L. B. TUCKERMAN,
Committee.

CHAPTER III.

ADDRESSES.

PRESIDENT'S ADDRESS.

THE EVOLUTION OF ASEPTIC SURGERY AND ITS PRACTICE IN THE COUNTRY.

BY

F. C. LARIMORE, M. D., MT. VERNON.

Gentlemen of the Ohio State Medical Society:

One year ago, at Columbus, under suspension of the rules, unanimously you called me to the Presidency of this most honorable body. Words cannot express my gratitude for this testimony of your confidence and esteem.

No one engaged in any professional calling, in this the United States, is so hard worked and poorly paid as the country doctor. He lives in a village, or at cross-roads, with no paved streets or pavements, no street cars, electric lights, water works, or other modern improvements to help him. He must travel in mud six months, and the balance of the year, this companion dirt will greet him in the form of dust. The public servant of every family in that community, he must respond promptly to all calls, night or day, and be ready to perform any duty demanded of his profession. Untidy, tired, and sleepy, he plods along with little praise, and still less money to encourage his weary life. Indeed his compensation is so meager and payment

so long deferred, that he cannot afford to keep a hired man, and must perform the duties of hostler and janitor himself. The homes he enters are no better provided for comfort and cleanliness than his own, and hence it can be readily seen how many obstacles confront him in the practice of modern surgery.

Frequent contact with general practitioners, and the difficulties encountered by them, have led me to seriously ponder whether a helping hand could not be extended which would lessen their burdens and overcome many of the impediments in the treatment of their surgical cases.

It would afford me great pleasure to present my own experience, but precedent has established a rule which excludes all individual work from the presidential address.

In 1796 Jenner made his first vaccination on man. In 1798 he published his first paper on the subject, "The Master-piece of Medical Induction," as it has been very properly called.

In 1846 Wells discovered the anaesthetic properties of ether and gave that priceless blessing to man-kind.

In 1896, Lister pronounced the last word in the completion of a long chapter on "The Treatment of Wounds." Thirty-three years before, he knew that a wound did not heal by primary intention because putrefaction (or septic condition) of the fluid in the wound prevented this kind of union. His labors were directed to find some agent that would prevent putrefaction in wounds. He had done his best to prevent this by scrupulous cleanliness and use of various deodorant lotions. Valuable assistance was afforded him by Cagnaird-Latour and Schwan who had independently discovered the yeast plant, Torula Cerevisiae, and had attributed the phenomena of alcoholic fermentation to this micro-organism. Liebig discredited these views. Pasteur proved that they were right, and showed that all true fermentations are caused by micro-organisms. He also disproved the doctrine of Spontaneous Generation. Carbolic

acid was used; first, in a concentrated form, then in diluted solution, in form of spray, and dressings impregnated with the same to destroy the germs already in the wound, and prevent the future access of others in the living state whereby putrefaction might be prevented. The intention of this treatment was good, but more or less injurious to the human tissues, and practiced under great difficulties, especially the spray.

July 22, 1872, your speaker witnessed some operations performed by Sir Joseph Lister at the Royal Infirmary in Edinburg; the removal of a loose cartilage from the knee joint; lacerated wound of the fore-arm involving the radial artery; amputation of a female breast. The master directed the use of carbolic acid as follows: 1-10 in wax for cat-gut; 1-20 water for injections, drainage tubes and spray; 1-40 for instruments and ordinary dressing solutions. Carbolized gauze, 4-pence per yard; eight layers over the wound; between the seventh and eighth layers, a piece of McIntosh cloth. These operations were very tedious, and notwithstanding the liberal supply of blankets, the patients chilled under the spray. The hands of operator and assistants were rendered insensible, white, and corrugated by the same. It is unnecessary to remind you that the spray has long since been discarded, the dressings greatly improved, and carbolic acid seldom used. The spray was abandoned early after the discovery of Metchnikoff of the protection against pathogenic micro-organisms afforded by the white corpuscles of the blood. He believes phagocytosis to be "the main defensive means possessed by the living body against the invasion of its microscopic foes." The blood between the lips of the wound is rapidly peopled with phagocytes which stand guard against putrefactive microbes and swallow them as they endeavor to enter,—literally a battle between the white blood cells and the germs. With this new light from the bacteriologist, not only the spray, but the irrigation of

wounds, which succeeded it, can be dispensed with, and the surgeon can conduct his operation as simple as in former days. The attenuated froms of microbes in the air fall harmlessly on the wound, and only the grosser forms of septic mischief, — "the lumps of dirt" — the surgeon has to guard against. Again, the bacteriologist lends a helping hand and defines the grosser froms of mischief to be the streptococcus pyogenes, the staphylococcus pyogenes aureus, albus, citreus, etc., and they gain access to the wound, chiefly by contact with the operated field, finger, instrument, ligature, suture, or dressing of the surgeon. Sir Joseph Lister was recently raised to the peerage, and is now Lord Lister,—the first to be so honored for medical achievements.

Prior to 1869, the treatment of wounds was empirical or experimental. With the new information we now possess the treatment is scientific because it is based upon scientific principles. This new doctrine has completely revolutionized the practice of surgery. It is so generally accepted as the rule and practice that there is not a voice in this assembly that will be raised against it. The foundation of Aseptic Surgery is as securely laid as that of vaccination and anaesthesis, and its benefits and achievements none the less important and brilliant. This brief history of the evolution of aseptic surgery has been produced to show why every enlightened and conscientious surgeon should practice it. Naturally, the great medical centers of Europe and America constituted the field where the new treatment was introduced and carried out, reaching the smaller towns and country much later. Again, the hospitals and all their equipment furnished the best place for carrying out the aseptic technique, but of its practice in the cities and hospitals, I have nothing to say. The skill of these hospital surgeons and results of their operations call forth the wonder and admiration of mankind the world over. We can envy, and at the same time, admire the metropolitan sur-

geon of to-day in his model operating room surrounded by skilled assistants and every facility known for the performance of a typical surgical operation. However, this envy and admiration should not result in discouragement, but stimulate our brains to devise and transfer all the good we see in them to the improvised operating rooms wherever a son or daughter of Adam requires surgical aid. If a man or woman ever felt the need of a home or friends, it is when his or her mind is distressed about the outcome of a surgical operation. By reason of special skill, the gynaecologist claims all extra and intra abdominal diseases of women. The general surgeon claims all surgical ailments. The right of these respective, and many times, rival surgeons, to all they survey, there may be none to dispute. The general practitioner may elect to practice medicine only, send his surgical cases to a surgeon, or call the latter to his assistance. Still he will be called to treat cases as truly surgical as any classified in surgery. Over one-half of the population of the State of Ohio lives in the country.—(53 per cent.) The environments of most of this rural community are such that their diseases, medical and surgical, must be treated by the general practitioner, so that the number of surgical cases in the country is not so small. These facts as just stated, together with a personal knowledge that all the details of an aseptic technique cannot be commanded, save by patient study and a conscientious desire to carry them out, have led me to consider how aseptic surgery can be practiced in the country.

Your speaker has been through the mill, and knows that there are many obstacles which confront the aseptic surgeon in the country. Strange to say, the one thing most needful, plenty of water, is hardest to secure. Even in country homes where you find all the needed comforts, the provision for heating water is very limited, and nothing is offered for washing the hands but an old greasy

wash-pan with seldom any vessel out of which to pour the water, and still more rare, a vessel for waste water. Soap and towels in many places are hard to obtain. In cases of confinement, a physician is expected to examine the case early upon his arrival. Four times out of five, he will be compelled to ask for water in which to wash his hands. This will be brought in a wash-pan, with or without soap and towel. This supply of water is expected to out-last the labor, and to be used over and over again, for there will be no voluntary effort to change the water, there being no supply-vessel nor slop-bowl provided. Oh woman, what dangers lurk within thy happy home. And the greatest of them all is septic infection by the dirty hand of the accoucheur to which you have been unknowingly an accessory. This, and other difficulties of conducting practice, while annoying and provoking, are not insurmountable and can be overcome by preparation in advance, and a determined will to have what is needed by calling for it.

Do we believe in vaccination, anaesthetics, and aseptic surgery? From the study of the latter, have we not learned that the grosser forms of dirt must be kept out of wounds if we are to avoid septic infection and look for primary union. We know and firmly believe that our practice is based upon sound principles. We know that "the surgeon's acts determine the fate of a fresh wound, and that its infection and suppuration are due to his technical faults of omission or commission." We know that the watch-word of modern surgery is "Cleanliness."

"PERSONAL CLEANLINESS."

Dr. Edersheim, writing of "The Temple and its Services," says, "A subterranean passage, lit on both sides, led to well-appointed bath-rooms where the priests immersed themselves. The priest, before burning incense, could touch no sacred vessel until he had washed his hands and put on the great day of atonement. The high priest

bathed in a place specially set apart for his use. Altogether, he changed his raiments and washed his whole body five times, and his hands and feet ten times." The laws of Mohammed ordain five prayers daily, and an ablution of the face, hands, and feet before each one of them. Bathing was very popular in the days of the Roman Empire. The immense ruins of the Caracalla Baths which still exist in Rome testify that they were among the most magnificent buildings of the city. I maintain that from a moral and business stand-point, a physician should keep himself clean.

A man never works better than he looks; never better than he feels. If a man feels unkempt, the work he does will be of the same grade. If, on the other hand, he feels clean, he works clean. Cleanliness of body and neatness of dress are distinct factors in a physician's success. The doctor who makes a point of keeping himself clean, and whose clothes look neat no matter how moderate the cost may be, can see better, and enjoy a freer working of his mind, and in every sense is a better physician than his fellow-brother who is disregardful of either his body or dress. In my experience, no substitute for the loss of a night's sleep is equal to the tonic-invigorating effect of a bath. No one in our profession can afford to be slovenly in body or dress. Time spent on the body is never wasted. On the contrary, a few hundred dollars expended for the means necessary to keep clean will be the best investment of a whole life. From three to four hundred dollars will provide a hot air furnace, complete for a dwelling house; a kitchen range with hot water boiler, and all the house plumbing for bath-tub; two wash stands; kitchen sink; water tank including a wind pump to pump the water. Let the office be located in the dwelling or on the same lot. In the house under the care of the house-keeper, it would be kept in order and free from loafers—a little paradise for cleanliness, comfort, convenience, and economy. It is

a shame and disgrace for any member of our profession to have an untidy office. It stamps professional advice and medicine with cheapness and is always detrimental to practice.

The physician should keep his hair and whiskers short, finger nails cut close; trimmed often during leisure moments. Ample provision for keeping the body and hands clean, both in home and office, is practicable in any rural district. Personal cleanliness confers upon its fortunate possessor as essential qualification for the practice of Aseptic surgery in the country. Many physicians take care of their own horses, or drive and hitch them, and perform other duties with their hands, frequently unprotected by gloves. Under these circumstances, it is doubly important to wash the hands after reaching the house. Good soap and water will answer for most cases, but for operative work, a brush and sublimate solution should be used in addition. This manifest care and preparation on the part of the physician will be duly noted and justly appreciated by the patient and friends, and every facility for its accomplishment will be promptly furnished. Know what you want, and knowing it, have the courage to ask for it. It should be an invariable rule to touch no child-bearing woman, handle no open wound, and perform no operation before washing the hands thoroughly. Never infect a patient with unclean hands.

The key to the practice of modern surgery is surgical cleanliness. Keep this constantly in mind and allow no tempting agents, under the guise of antiseptics, to be substituted for this "*sine qua non.*" Antiseptics, if employed at all, are to be used as aids to cleanliness and not for their intrinsic merit as bactericides. "Cleanliness is next to godliness, and godliness is great gain."

"PREPARATION."

Faithful preparation is as necessary for the conscientious performance of a duty, as it is to the intelligent performance of a duty. Study your needs in advance so as to be well equipped for any and every emergency. Never have occasion to regret that you did not have the right instrument or dressing at your command.

A small book-case is a convenient place to keep surgical supplies. It should be used for this purpose alone and kept well stocked with brushes, pans, sterilizer, bandages, suture material, raw and prepared cat-gut, silk, silk worm gut, silver, and kangaroo tendons, cotton, plain absorbent, and common gauze, iodoform gauze, sponges, solutions carbolic acid—1–40 and 1–80, chloride of zinc–8 per cent, sublimate, iodoform, boric acid, permanganate of potash, iodoform collodion, sodium, carbonate, creolin, alcohol, drainage tubing, towels, etc. Everything should bear the stamp of being clean and kept in a clean place. According to this rule, rusty instruments, dirty pans, and dusty dressings, would not be allowed.

BUGGY CASE.

Nearly every physician in the country carries a buggy-case. At least one-half of the space in this case can be well sacrificed to a few surgical dressings—one yard of gauze; three gauze sponges; one roller bandage, six yards by two inches; absorbent cotton, six by twelve inches; wrapped in two small towels; one French aseptible catheter; sublimate soap, ½ per cent bichloride of mercury, or half an ounce tincture of green soap; and a half ounce sodium carbonate.

POCKET CASE.

The pocket-case must be remodeled to conform with the new practice of surgery. Knives with tortoise-shell handles, old-style scissors, forceps, and exploring needle

must be discarded and replaced by modern instruments, all aseptible. Let them be of the best quality and few in number. Straight bistoury, sharp pointed exploring needle, hernia knife, each all steel. Common probe eyed, aluminium probe, director, and aneurism needle combined, scissors with box lock, tissue forceps, light, to be used as a needle holder and hemostat, hard rubber tube for iodoform collodion, needle cushion, 3 by 1¾ inches, one fold of light leather lined with one fold of flannel. In each leaf, place one dozen needles, two dozen in all, of various kinds, sizes, and shapes. In their selection, keep in mind the kind of needle you may need in a given case. A paste-board card on which wind six pieces of silk-worm gut, nine strands of silk, each 18 inches long, three of each size, Nos. 0, 2, and 4. One dry, sterilized, cat-gut in an envelope (Dr. E. Boeckmann's), size 0,20 inches long. The leather case should be leather lined, with a good clasp, and will weigh less than seven ounces and can be carried in the hip or coat pocket, an aseptible case. I have carefully examined the model and elaborate aseptic pocket-cases of Dr. Cyrus Edison of New York and Dr. John B. Hamilton of Chicago. Each will weigh over eleven ounces. The instruments will rattle in their metallic holders. Weight and noise make them objectionable and uncomfortable to carry in any pocket on the person. This armamentarium chirrurgicum will enable the general practitioner to meet the minor surgical indications occuring in his daily round of practice. A lacerated perineum at the midnight hour, in a country home, miles from his office, can be closed with observance of all the rules which govern the practice of aseptic surgery, for he will have a choice of needles and sutures, the means to make his hands, instruments, and the field of operation aseptic.

An abcess can be explored and opened in the new way;—by boiling the exploring needle and straight bistoury in a 1 per cent sodium carbonate solution; field and hands

prepared with soap and water and bichloride mercury, 1–1000, using gauze for a sponge, and absorbent cotton and bandage for a final dressing. After the operation, boil the instruments again and wash with green soap and water and dry thoroughly.

The pocket-case instruments are used in such a varied number of cases that it is even more important to observe all the precautions of keeping them clean than the instruments for a major operation. One may say that an abcess is an infected focus, and why be so fastidious about letting out a little pus? But what of the needle and knife when the same is to be used the following day on another case? Keep these instruments scrupulously clean,—so clean that you would be willing to have them used on your own precious self in case you were so unfortunate as to require them. A pocket case determines the kind of surgery its possessor will practice. The contents and conditions of the same show the intent and provision for the pactice of minor aseptic surgery.

Before the introduction of a soft catheter, the physician's hands should be washed with sublimate soap and water. After changing the water, the catheter should be washed in suds made with the same soap, using a hard rubber syringe to wash out the bore of the instrument. For a lubricant, use the soap. After the urine is drawn off, wash the catheter again in the same manner as before the operation. In homes where it is necessary to catheterize a patient from time to time, you will be surprised how readily you will be assisted in preparing a toilet for your work, and how careful the patient or nurse will be to imitate your example in case you should delegate the performance of catheterization to them.

The aseptic technique is not a complicated problem difficult of solution, but a number of little things to do, each having a given object in view. These are all to be carefully considered, with the reasons therefor, and con-

scientiously carried out. If, through ignorance of these minor details, or negligence in their execution, one should attempt to practice aseptic surgery, his work will result in a miserable failure. Knowledge of the principals and surgical handicraft of surgery do not come to a surgeon by intuition. Only by patient study and painstaking practice can he master the situation. There are two very valuable books especially devoted to this subject, which I regard as indispensable to its complete understanding;—"Aseptic and Antiseptic Surgery," by Arpad G. Gerster, M. D.; "Aseptic Surgical Technique," by Hunter Robb, M. D.

The Journal of the American Medical Association and the *Medical Record*, of New York, contain articles nearly every week on the constantly changing and ever improving methods of practice in the technique. Prove all things, hold fast to that which is good. The resources of our profession are endless in delight, and if you find in the beginning that you love it, you will never cease to be happy in its pursuit.

ADDRESS.

THE CURE OF INGUINAL HERNIA IN THE MALE*

BY

HENRY O. MARCY, A. M., M. D., LL. D.,

BOSTON, MASS.

Mr. President: My thanks, sir, are due to you for your complimentary introduction, since I must confess that I accepted your invitation to deliver the annual address upon surgery with more than usual pleasure. This in part because the subject was of your selection, and presumably grew out of an early correspondence upon hernia

* Illustrated by stereopticon views.

and the knowledge of your own wide experience as an operator, you being among the first, if not the first of the surgeons of Ohio to effect the cure of hernia in the male.

Another and a personal reason is the fact, that the larger share of my family have been citizens of Ohio, my grandfather, Thomas Marcy, having been one of the early settlers of the Western Reserve, having made eighteen round journeys from Massachusetts with his four-horse canvass-covered wagon in the enthusiastic settlement of the town of Freedom, Portage county.

Therefore, accept the congratulations of a foster son upon the high position which the members of the medical profession of Ohio have taken, not alone in the councils of our nation, but also in the great brotherhood of the profession.

We limit the subject of our discussion this evening to the cure of hernia in the male, since this is confessedly by far the more difficult variety of hernia in which to effect a cure, because, no matter what means are employed, it is essential that we permit the passage of the uninjured cord through the abdominal wall. The student of the history of surgery finds that the surgeon of an earlier period made comparatively easy the permanent cure of hernia, by the sacrifice of the testicle and the permanent removal of the *vas deferens* with its attendant vessels, but in that period of surgical development an uninfected wound was a rare accident, and the suppurative processes, incident to wound repair, made the plastic reconstruction of the abdominal wall an impossibility.

It was reserved as one of the triumphs of antiseptic surgery to make possible the cure of hernia in the male by the reconstruction of the parts to their normal condition.

To this end certain factors are necessary. First, an open and free dissection of the parts, the wound made and maintained aseptic.

Second, the reconstruction of the inguinal canal to its normal obliquity and the re-enforcement of its posterior

wall, in order that the intra-abdominal pressure may be brought to bear upon it in a way to coaptate and close its walls, instead of acting as a wedge to dilate the canal by the escape of a portion of the abdominal contents through it.

For the making and maintaining of a wound in an aseptic condition, surgery will be indebted for all time to the immortal Lister, and I take much pleasure in expressing my special indebtedness to the great master, as his first American pupil. Based upon his demonstrations that arteries might be ligated in continuity with sterilized cat-gut, it seemed to me a reasonable corollary that undivitalized tissues might be safely coaptated by the use of buried sutures, to be left undisturbed in closed wounds, and this has been my contribution to surgery. These were first used for the purpose of affecting the cure of hernia and published by me in 1870.

The methods best adopted for this purpose will be referred to later, and since all good surgery is necessarily based upon an intimate knowledge of the anatomy of the parts with which the surgeon has to deal, I shall now call your attention to the photographic reproductions upon the screen of as large a number of the splendid demonstrations of the great masters of a former generation as the time at my disposal will permit. In passing, I would emphasize that very exceptional piece of bookmaking at the beginning of our century, Sir Astley Cooper's work upon Hernia, his expenditure upon the illustrations of which alone cost five thousand pounds sterling.

The excellent artistic perfection of the illustrations in Scarpa's great work upon Hernia, first published in 1812, is even superior to that of the great London surgeon, while Bourgery's surgical atlas is likely long to maintain supremacy, since the original drawings were, not alone like its predecessors, produced by great artists, but each one of his plates were carefully and painstakingly colored by hand. This extraordinary work was published at twenty-

five hundred francs per copy, and to-day is obtained only with the greatest of difficulty.

I take pleasure in expressing my thanks to Mr. Appleton of D. Appleton & Co., publishers, for his generosity, which has made possible the faithful reproduction of these and many other valuable plates, and for placing the same at comparatively small cost at the service of the surgeon of to-day.

I think you will agree with me that the analytical examination of these plates demonstrates the fact, that singularly enough, has scarcely been pointed out by any, that the inguinal canal traverses the abdominal wall in a direction so oblique that the intra-abdominal pressure is exerted at nearly a right angle to its axis, and that in its normal development, the greater the intra-abdominal pressure produced by the most violent exertion, the more closely is the canal closed upon itself by the lateral compression of its walls. This will be readily observed by the study of athletes in the performance of their extraordinary feats of muscular exertion, where the abdominal muscles are actively brought into use.

My attention was first directed to it by the study of the valvular closure of the ureter at its entrance into the bladder. The obliquity of its passage through the bladder-wall being such that the more distended the viscus, the more firmly is the canal closed in order to prevent the reflux of the urine.

We are indebted to Sir Astley Cooper for having pointed out that normally there exists a very decided reenforcement, or thickening of the *transversalis fascia*, which is the chief element of strength in the posterior wall of the inguinal canal. This, normally, should continue quite up to or beyond the internal ring, the opening of which is strengthened by bands of circular fibers. Sometimes muscular *fasciculi* of the *transversalis* extend below the internal ring and when this takes place it might be said

that the internal ring of the canal is formed by an opening through the transversalis muscle. These muscular fibers are unimportant except as a study of the developmental processes, but the exceptional thickening of the connective tissue which normally pertains is the especial reason why the obliquity of the canal is maintained. This has been called the *fascia Cooperi* in honor of the great surgeon.

I have shown you the magnificent illustrations of W. Darrach, M. D., published in Philadelphia in 1830. He was an enthusiastic pupil of Cooper and made his dissections and measurement after the methods of this great master. You will also note that the fine dissections of Blondin clearly demonstrate the oblique course of the canal without any hint whatever of its physiologic importance.

In this connection I invite your attention to the plates of Cloquet, who is said to have made five hundred dissections of hernial subjects. From him we have the naming of the structures about the internal ring as seen from within, called the *infundibular* process. This is designated as normal anatomy, but, in reality, no such process exists in the normal development and can only be made so to appear by pulling upon the cord, when a depression will take place from undue tension of the lower border of the internal ring. In the normal condition the connective tissue attachment of the cord to the internal ring and peritoneum is such as to permit an easy play of the cord through the ring, and, when this alone exists, the peritoneum presents a smooth, even surface without depression over the site of the internal ring. But here it will be remembered the constituents of the cord which passes from the testicle to the internal ring separate at a wide angle, the *vas deferens* alone descending to the seminal vesicle at the base of the bladder.

By far the more common cause of inguinal hernia is found in the imperfect development of the structures making up the internal ring, and this consists almost entirely

of a depression of the lower border of the ring and lack of resisting power in its posterior wall.

It is certainly impossible to produce an indirect inguinal hernia, following the line of the canal without there first having been a very decided weakening of the lower portion of the internal ring. When this has taken place, the intra-abdominal pressure commences to act as a wedge, and every special effort of the abdominal muscles produces a decided hydrostatic impulse which, little by little, opens still farther the inguinal canal. Although a sense of weakness and discomfort is often felt, as a rule, the subject does not appreciate his condition, until the external ring gives way as a result of some sudden muscular effort, and this has given to hernia the name of rupture, signifying a sudden yielding of the retaining structures.

I have presumed to occupy this much of the time in the emphasis of the normal conditions, since it is evident that, in the proper sense of the definition, the cure of hernia must be the restoration to, and maintainance of the structures in their normal condition, which I contend, means the *reconstruction* and *reenforcement* of the posterior wall of the inguinal canal as its *first* and most important factor. It is not, as many have accepted, simply making a new canal for the passage of the cord, or again reducing the same in size so that the cord may be permitted to escape through a smaller opening.

When this portion of the canal has been reconstructed, the remainder of the problem is reduced to simple terms, to wit, the closure of the external structures, after the cord has been replaced, and the reformation of the external ring.

Operators form the new canal in a variety of methods, and this constitutes in a large degree the hernia operations named after different surgeons. The custom of thus recognizing the value of the services of contributors to our art is most satisfactory and pleasing, especially so, since the only reward given to merit for such service is complimentary.

However, names are confusing unless the conditions indicated thereby are kept clearly in mind. I have, from the beginning, contended that, in normal anatomy, the surgeon will ever find his safest guide, and departures therefrom are defective and dangerous. One extreme of reconstruction, which may be considered the swing of the pendulum from early conservatism, is the forming of the internal ring as high up as possible and placing all the strong structures of the abdominal wall behind the cord, covering it in with only fatty tissues subjacent to the skin. This in effect makes a short, direct opening through the abdominal wall, so far as its important resisting structures are concerned. Without taking into consideration the impairment of the function of the testicle, owing to the unnatural relation of its efferent canal, a danger far more than hypothetical, there is left, as a result of the operative interference, an opening, more or less large, directly in line with the intra-abdominal pressure. This not seldom is the site of a recurrent direct hernia, the abdominal contents usually escaping above the cord. I have several times operated for the cure of such a recurrent hernia.

In quite a number of the illustrations projected for our study, it is clearly demonstrated that the structures external to, and opposite the internal ring are of a very strong, unyielding character, made up as they are of the conjoined tendon and Poupart's ligament firmly united each to the other by the inter-columnar *fascia*. These structures buttress from without very firmly the internal ring and necessarily reflect the intra-abdominal force obliquely downward along the line of the canal. When the internal ring is of normal dimensions, the intra-abdominal pressure forces it against these strong unyielding structures and produces a firm valvular closing of the sides of the inguinal canal, and in the reconstruction of the structures for the cure of hernia, it is of the utmost importance that these parts are restored to their normal integrity.

I know that even the most accomplished surgeons present will pardon the emphasis which I have made in the foregoing analysis of the normal structures which make up the inguinal canal, the more so, especially since the surgical authorities have treated this part of the subject as of little importance.

In the discussion of the cure of hernia, naturally the first question which arises is, when to operate?

Early in my experience there were very few surgeons who gave their approval to my opinions and with emphasis declared that operative interference should be limited only to cases of strangulated hernia, and that here it might be permissible to institute measures for the cure of the hernia. Indeed, it was with great difficulty that I secured the presence of a physician to witness my first operation, in 1870, deliberately undertaken for the cure of a reducible hernia. Little by little, confidence grew in the safety of the new surgical measures, and it was deemed permissible to operate upon hernia, where the retention of the abdominal contents was difficult or uncertain. When it was clearly demon strated that the operative wound could be safely closed without drainage, and that the iodoform collodion seal was a protection from subsequent infection, the list was enlarged to make it advisable to operate upon children, until now a very considerable, although minor portion of the profession, deem it permissible, if not wise, to operate upon any of the great truss-bearing army of invalids who are otherwise in a fair condition of health.

My own experience has gradually produced the conviction that, as a rule, it becomes the duty of the competent surgeon to advise the larger number of hernial subjects to avail themselves of the present safe and almost certain means of cure.

First, because every man affected with hernia is liable at any time to a possible and immediate danger to his life. The strangulation of a loop of intestine, escaping through

the inguinal canal has from time immemorial been considered as a condition of the greatest danger.

The statistics of our large hospitals show a greater mortality in this class of operations than in that of almost any other, not from the operation *per se* as was too often earlier supposed, but from the conditions which demand operative interference.

That this danger is a common one every practitioner present will testify from his own too abundant experience.

Statistics are now ample to show that the operation undertaken for the cure of hernia, when the abdominal contents are not involved, should be almost entirely devoid of danger.

In my own experince, now in my four hundredth series, I have not seen a case which seemed to approach the danger line where the intestine was not involved. In my recent work upon hernia, I have collected over three thousand operative cases, with a mortality of less than one per cent., and even here the fatality is ascribed to other and accidental causes.

That hernia may be permanently cured the testimony of experience is now ample. My own statistics give a permanency of over ninety per cent., and some of these cases have been under observation for many years. That this widespread infirmity is owing to something more than accidental causes is adduced from the fact that in the United States alone there are estimated to be between three and four millions of sufferers from hernia. This great truss-bearing army of invalids appeal to our sympathy for aid, and it is in their interest especially that I plead with you to qualify yourselves to furnish the means of relief.

The details of the operation in a general way may be outlined as follows: It is taken for granted that this, as every other surgical operation, must be conducted under the most careful modern aseptic precautions. The parts having been shaven and disinfected, the incision is made in

the line of the canal and of sufficient length to permit of a free and easy manipulation of the parts involved. The cord is carefully separated from its attachments and carried toward the median line, where it is gently held as most convenient by an assistant. The hernial sac is opened, and its contents examined, and returned to the abdominal cavity. If adhesions have formed these are carefully separated. Not very rarely an omental mass, which has long been retained, constituting an unreducible hernia, is wisely removed. If so, its pedicle must be sutured across with much care. It is my usual custom to do this in two lines of double continuous suture. The advantage of this lies in the fact that the pedicle is subdivided into as many parts as may seem desirable, while a second line of suturing renders hemorrhage less liable and permits the occlusion of the vessels with less violence to the constricted structures. The preserving of the enclosed structures undevitalized is of the first importance although a strict asepsis has been maintained. It is much wiser to return the incarcerated omentum, unless its deformation is very considerable, or that its many bleeding points cause it to be a source of troublesome hemorrhage.

In strangulated cases the condition of the incarcerated intestine may demand special operative measures, discussion of which cannot be entered upon at this time.

The sac, if of any considerable size, is to be dissected to its very base, and separated from its attachments quite within the ring. Tension is gently made upon it by an assistant, while it is sutured in the long axis of the wound, and then the sac is resected. The suture is greatly to be preferred to the ligature in that it closes the peritoneum in an even seam, without the possibility of slipping from the enclosing suture.

The elasticity of the peritoneum is quite sufficient to cause it to retract without depression. The structures which make up the posterior wall of the canal are now re-

formed by enclosing from side to side the attenuated *transversalis fascia*, until the sutures are carried from below upward as far as the judgment warrants, reforming the internal ring by coaptation of the tissues under the cord upon its posterior border. In large, old herniæ these tissues are often so atrophied and weakened that it is wise to split the conjoined tendon and Poupart's ligament, enclosing their posterior portions to strengthen and reform the posterior wall of the canal. When this has been effected, the cord is replaced and the firm aponeurotic structures of the oblique muscle are carefully sutured from above downwards, the last stitches forming the external ring. A layer of skin sutures, also buried, completes the operation. The wound is thoroughly dried, the edges of the skin are carefully adjusted and held in apposition by a protective layer of iodoform collodion, reinforced by a few fibers of absorbent cotton.

It is many years since I have used drainage of any kind. The patient is kept in the recumbent position only so far as is necessary to give physiologic rest to the parts involved. This should be maintained for about three weeks. No truss is subsequently applied and light work is permitted at an early date, only insisting that the patient must be careful in exercise for a number of months, since I believe that the full resisting force of the structures returns very slowly.

In children it is the exception to remove the sac, oftentimes it is not necessary to open it, although I believe the rule is a good one in order to be sure that the sac is empty, and that is often ascertained only by an examination of the interior of the sac.

The suture material to be employed is important. For a considerable period I used sterilized cat-gut, then the tendons obtained from the deer, caribou, and moose, but since 1882 I have used exclusively the tendons taken from the tail of the Kangaroo. These latter furnish almost an ideal

suture material, are strong, smooth, and even, and are obtained of any size which may be desired. They should be taken from the freshly-killed animal, quickly sun-dried and kept dry until prepared for use. In this way they have never been subjected to processes of decomposition and, as a consequent are not likely to have been invaded by bacteria.

Their preparation consists in soaking them in a 1-1000 solution of bichloride of mercury until softened, so as to be easily manipulated, separated, and selected. They are then dried on an aseptic towel, soaked in a solution of formal, after which they are chromicised (a sort of tanning process for the fixation of the cement substance), and are ready for use. Like cat-gut they may be preserved in a very considerable variety of media; bichloride alchohol, boiled in alcohol or kummel. However, these processes injure the structure of the tendon materially and, on this account, I still prefer the boiled linseed oil and carbolic acid, as first recommended by Lord Lister. When preserved in this, excluded from the air to prevent the oil drying upon the tendons, the suture material improves with age and I prefer not to use the tendon until it has been six months thus preserved. The carbolic oil is not a germicide and should be kept carefully closed from any source of infection. Wet tendons must not be put in the oil, but carefully dried first covered in an aseptic towel, since the water forms an emulsion with the oil which will soon soften and ruin them. In preparation for an operation the tendon is transferred from the oil to a warm solution of 1-1000 bichloride of mercury, in which it is to remain for half an hour before using. In this way it becomes supple and is applied more easily. When first taken from the oil it is much too hard and stiff for easy manipulation. Cat-gut is the connective tissue sheath of the intestine of the sheep, and no matter how prepared it is necessarily defective from its inherent construction.

While I would again emphasize that the one object to be attained in the cure of hernia is the reconstruction and reenforcement of the inguinal canal to its normal obliquity, the especial means by which this is effected may vary greatly and yet the results be satisfactory. Silk, silk-worm gut, silver wire, cat-gut, all may be used as suture material, and may be applied by various methods, and the inclosing structures may vary in a considerable degree, and yet the resultant cure be effected. I believe in the use of as few and simple instruments as possible, and consequently have added to the list only with reluctance.

The advantage, however, is considerable in the use of a needle with the eye near the point by which the suture is introduced under the parts to be enclosed. It is threaded, carried through the parts, unthreaded, rethreaded with the opposite end and withdrawn. In this manner, a double, or two lines of continuous suturing are applied, quite after the way in which the shoemaker sews with awl and waxed end.

It is to be remembered, however, that coaptation and not constriction is sought with a minimum of violence to the sutured structures. With an Hagedorn needle the tissues may be coaptated by introducing the needle from side to side, parallel to the long axis of the wound, each stitch entering directly opposite the emergence of the preceding one. In this way the tissues are neatly intrafolded and held in even coaptation. With ease and rapidity the reconstruction of the parts to their normal conditon is effected. With a very fine suture, the stitches being taken through the deeper layer of the skin only, the edges are coaptated by a buried suture without wavy lines or puckering.

The collodion seal renders subsequent infection impossible and aids in a measure in holding the structures in a state of physiologic rest. The addition of idodoform in solution is of value in its inhibiting power upon the de-

velopments of the *M. pyogenes albus*. Bandages of any sort are worse than useless.

Little by little the buried animal suture is encapsuled by leucocytes and invaded by them. These in turn are transposed into connective-tissue cells and *pari passu*, as the suture is absorbed, a living band of connective tissue is formed. This process may extend over a period of from four to six months.

In closing let me thank you for the attention which you have given me. A subject of such importance and extent has necessarily been treated all too briefly with many omissions of important details. For the sake of brevity I have laid myself open to the criticism of being dogmatic. I have necessarily been obliged to omit entirely the history of operative measures, undertaken for the cure of hernia, which in itself is of exceptional interest and would compass an entire evening if briefly told.

During the last quarter of a century, with unwearied enthusiasm, I have endeavored to teach the lesson which tonight I have here presented. In many of its essentials more recently the credit has been given to Bassini of Italy, whose first operations were undertaken long after my repeated publications upon the subject. I am not without personal ambition and it is with the largest pleasure that I not alone invite criticism, but ask that whatever of merit has accrued to our art by my own unwearied labors may be accorded to American surgery.

ANIMAL TUBERCULOSIS—ITS RELATIONS TO HUMAN TUBERCULOSIS—SUGGESTIONS FOR ITS MANAGEMENT.

—BY—

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Thirty-two years ago Villemin demonstrated the infectiousness of tuberculosis by inoculating rabbits with tuberculous sputa. Fourteen years ago I read a paper before this Society, giving clinical evidences of the communicability of tuberculosis from person to person where they dwelt together. I cited cases where whole families had become extinct in a few years from consumption.

Then I stood almost alone in this Society as the advocate of this doctrine. We had then just learned of the bacillus tuberculosis, discovered a few months before by Koch. To-day we realize that few discoveries in medicine have been followed by such rich results. The profession has accepted the doctrine of Villemin. We have learned that, tuberculosis in men and animals depend upon one and the same cause, and that it is reciprocally communicable. Our food animals, cattle, hogs, game and fowls; our pets, dogs, cats and birds, as well as the horse, are all subject to tuberculosis. The sheep is less liable to it than any of them. In Massachusetts where inspections are made no tuberculous sheep have been found.

In the tables of human morality nearly or quite one-sixth is credited to tuberculosis. This is nearly double that which is caused by diphtheria, scarlet fever, smallpox typhoid fever and measles combined, which are under our statutes reported infectious diseases.

The battles of the future, as in the past, will be with microbic diseases, but on different terms. We know their fatal secret, and we know how to meet them.

Vaccination and serum therapy have shown us how we may both prevent and cure such diseases; before which the profession stood powerless formerly.

The battle with tuberculosis is on, and to the struggle we come urged by our past and present experience, and our hopes for the future. Bovine tuberculosis prevails over all Europe, North America, Australia and the islands of the sea. It is a disease of all countries, and increases in virulence as the temperature of the regions increases. In 1879, 1880, 1881, at the abattoirs of Augsburg the proportion of tuberculized animals was 2.38 per cent. This distributed among animals according to age showed, of those less than one year of age, .02 per cent.; from 1 to 3 years, 7.1 per cent.; from 3 to 6 years, 35.5 per cent.; over 6 years 59.2 per cent. There were four times as many cows as other beeves infected. During 1890 and 1891, 12,000 cattle were slaughtered in England for contagious Pleuro-pneumonia. Of these 1,464, or 12.2 per cent. were found to be tuberculized. (Report Mass. Cattle Commissioner, 1894). In some special herds the number infected with tuberculosis rose to 75 per cent.

Statistics from abattoirs in Germany show that among 51,427 slaughtered animals, .6 under six weeks of age were infected; .6 from six weeks to one year; 11.4 from one year to three years of age; 33.11 from three to six years of age; 43.4 over six years of age.

Abattoir statistics from Berlin: Before 1892 there were 12 per cent. infected; in 1892–93, 15 per cent. infected; in Saxony, in 1893, 18 per cent. infected.

In Liepsig, from 1888 to 1894, the number of cows infected rose from 17.5 to 31.1 per cent.

In Schwerin, the number of infected cows rose from 12.83 per cent. in 1886, to 37.60 in 1894; and the number of infected bulls, oxen, and calves increased in an equal ratio.

The following statistics are from widely separated places: Prussia, among slaughtered animals, 9.5 per cent. infected; Berlin, 12 per cent infected; Dresden, 14.4 per cent. infected; Bromberg, 26.2 per cent. infected; Upper Silesia, 9.5 per cent. infected; Midlothian, 20 per cent. infected; Yorkshire, England, 18.7 per cent. infected; London, 25 per cent. infected.

The records of the abattoirs of Copenhagen for four years, 1890–93, show that of 132,294 beef cattle 23,305, or 17.70 per cent. were tuberculous; of 8,292 hogs, 1,272 were tuberculous, 15.30 per cent.; of 185,765 calves, 369 showed tubercules, 0.2 per cent.; of 337,014 sheep one was tuberculous, 0.0003 per cent.

The records of the Berlin slaughter houses in 1892–93: Of 142,874 beef cattle 21,603 were tuberculous, 15.1 per cent.; of 518,073 hogs, 7,055 were tuberculous, 1.55 per cent.; 108,348 calves showed 125 tuberculous, 0.11 per cent.; of 355,949 sheep 15 were tuberculous, 0.004 per cent. (Royal Com. Report on Tuberculosis).

Of animals undergoing government inspection, at various abattoirs, at Chicago, Kansas City, St. Louis, a very small fraction of one per cent. were found tuberculous. The efficiency of this inspection will be appreciated when you learn that for ten hours each working day in the year, every inspector in the government employment would have to inspect two animals per minute.

"Of 14,050 animals tested by the department of agriculture, 11,582 were healthy and 2,468 diseased (17 per cent.) In Germany, according to Siedamgrotsky, in the state of Saxony (excluding calves), in 1888, 5 per cent.; in 1889, 9 per cent.; in 1890, 16 per cent. were infected. This would seem to show that tuberculosis is increasing, and though I do not doubt that this is so, these marked deviations in the number of animals found to be tuberculosis are probably explainable more from the fact that the government meat inspection was gradually being more rigidly enforced than that the

disease itself was increasing at this apparently alarming rate. Even in the thickly peopled German Empire tuberculosis is seemingly more prevalent in certain districts than in others. In the district of Argenmuende, for instance, among 13,000 cattle slaughtered, none were found to be tuberculous, and in the district of Teltow, among 40,000 head killed, only fifteen cases appeared.

Dr. Ostertag's observations at the Berlin abbatoirs show, on the other hand, that 25 per cent. of the adult cattle slaughtered there for human food are tuberculous in a more or less degree. Age plays an important part as to tuberculosis prevalency. Yearlings and under are rarely affected but with every year of advancing age the chances of escape become less. Old milch cows (ten to fifteen years), are rarely immune. On an average, Ostertag found 75 per cent. of these old dairy veterans carrying scars of their battle with grim phthisis."

(Prof. D. S. White. Address before the Ohio State Agricultural Convention, 1897.)

Of 26,958 animals tested by tuberculin in Massachusetts, 4,389 were found to be tuberculous. The proportion of tuberculized animals found at the slaughter-houses was 1 per cent. The reasons for this will be obvious upon reflection. Most of the animals shipped to the stock-yards in this country are young. They have had the range of pastures, and have never been stable-fed, because the climate where they fed is such that they are kept in the open air. Confinement in stables is dangerous; it is there that infection spreads the most surely and rapidly.

In the state of Massachusetts, where there is a systematic effort being made to stamp out tuberculosis among cattle, the condition of affairs is alarming on the farms. Of twenty-two herds, aggregating 779 animals, 317, or 40.6 per cent., were found infected. One fine herd of five, which supplied milk for children alone, furnished five infected animals. In another instance, a herd of selected animals

kept in the best possible environment, 64 animals showed 60 infectious, and these animals furnished milk for food. (Rept. Mass. Cattle Com. 1896.)

Tuberculosis is very common in herds of cows gathered near large cities, in order to furnish milk to the inhabitants thereof. At San Jose, California, of 892 cows tested with tuberculin gave 225 reactions, 25 per cent. At New York City 2,147 tested gave 405 reactions, 19 per cent. At Richmond, Va., out of a herd of 134, 95 reacted, 66 per cent. In Pennsylvania, of 2,975 cows tested, 795 reacted, 20 per cent. At Watertown, N. Y., 15 dairies of 281 cows showed milk contaminated with tubercle bacilli, and two dairies in which no cows reacted, produced contaminated milk. It is said that 3.5 per cent. of the cows in New York are tuberculous. We have one herd of 27 near Columbus, of which 11 reacted 40 per cent.

Of 6,300 cattle tested for tuberculosis in 1896, in Connecticut, 897 reacted to tuberculin and were destroyed, 14 per cent. Of one herd in northern Pennsylvania, out of 171, 150 were tuberculous, 90 per cent. Seven and one-half years ago this herd was sound. Six short horns which were coughing were purchased then—with the above mentioned result. The average age of these cattle is 4½ years. Jour. Comp. Med. April, 97.)

As to the prevalence of tuberculosis among swine we have but little information from abattoir statistics, or other sources. The tuberculized hog emaciates and dies speedily, while a tuberculized cow even fattens with extensive lesions. and may die in good condition. Fowls are not readily infected with the bacillus of human tuberculosis, but they suffer from a special form which spreads among them. Recent investigations, however, seem to show the two forms depend upon the same organisms, modified by the ground upon which they grow. Parrots are infected with lupus when long exposed to human tuberculosis, and there is a case reported in which *aviare* tuberculosis was commu-

nicated to a human being by a blow from the bill of a sparrow thus diseased. Horses have been infected by feeding upon the milk of tuberculized cows. Dogs, cats, rabbits, and cobayas are quite commonly affected.

The bacillus-bearing discharges from the lungs of men and animals, when dried and pulverized, may enter our lungs and cause infection. The dejections from the bowels of cattle dried and pulverized, as they are around stables and on fields, are another source of inhalation infection, and this mode of infection is probably not uncommon. Ever since Villemin's discovery, feeding experiments have been going on which conclusively show the flesh and milk of tuberculized animals may be the source of infection.

Toussaint succeeded by the injection of some drops of blood, drawn from a tuberculized sow, at the first trial in infecting a young pig with generalized tuberculosis. He also by injection of the juice and blood expressed from the muscle of a tuberculous heifer, under the skin of a pig, (2 c c) caused general tuberculosis of the animal. The same authority caused infection, both in pigs and rabbits, by injecting the expressed juice of the lung of a tuberculous cow ($1\frac{1}{2}$ c c) after it had been heated for ten minutes to 58. c. The infection was general.

To determine the maximum resistence of the tuberculous virus to heat, he submitted the muscle and defibrinated blood of a very fat beef to 61, 63 and 65 C. temperatures= 141. F, 147. 4. Fah. 149. Fah. Four cobayas received the juice at 61 c., four at 63, and two at 65 c. All died of general tuberculosis. Rabbits were injected with the juice of muscles exposed to a heat of 70 c., 158. Fah. for two minutes. They became tuberculous and died. (Bouley, Contagion Vivante.)

The Royal Commission of Great Britain, in 1890, fed pigs, guinea pigs and rabbits their usual food, to which was added the flesh and milk of tuberculous animals,

always uncooked, and obvious tubercular material was avoided. Thirty-six per cent. of the pigs, sixteen per cent. of the guinea pigs, and fifteen per cent. of the rabbits were infected.

Woodhead conducted a similar set of experiments. Result—100 per cent. of pigs, 100 per cent. of cats, and 75 per cent. of the guinea pigs became infected. Can we longer doubt from this array of terrific facts that our food animals have a very intimate causal relation to consumption among men?

Leclainche removed the muscle from the calf of the leg of bodies of men, who died of generalized tuberculosis, in such a manner that they could not be contaminated with tubercular deposits elsewhere in the bodies. Thirty-seven experiments with the expressed juice injected into the peritoneal cavity of the cobayas, while they were at the same time fed with pulp, gave 5 successes. (1) Sternheil performed a similar experiment with the juice of the psoas muscle in ten animals, and Lienaux and Gratia in two (cobayas) with twelve successes. (2) The success of both series of experiments was 39 per cent. It is asserted by some authorities that tuberculosis of man is not as virulent as that of animals.

Gerlach Bollinger and others long ago proved that milk from tuberculous cows would cause the disease in animals to whom it was fed.

Peuch fed a pig 270 quarts of milk from a tuberculized cow in 43 days, producing general tuberculosis. A rabbit drank 14 quarts in 80 days—result general tuberculosis. Klebs says the cattle herders of the Berne overlands among the Alps are scourged with miliary tuberculosis. They are a hardy race who spend the entire summer in the Alps, and their entire food is bread and milk. They are infected by milk. The bacilli enter the blood from the intestines, causing miliary tuberculosis. Animals are infected in the same manner as men, by inhalation and ingestion of the

bacilli, as well as inoculation. Three successive generations of cows fed at the same stall have perished from tuberculosis. The diagnosis of bovine tuberculosis by physical examination is by no means easy. The cattle may have extensive lung lesions without emaciating, and even grow fat. Injections of tuberculin will in 90 per cent. of cases produce a febrile reaction of from 2 to 4 degrees in from 10 to 15 hours in infected cows. This febrile reaction bears no relation to the extent of the lesions, being absent in some cases in animals far advanced in the disease, but after all it is the best means at our command.

I learned from the Cattle Commission of Massachusetts, that in their experience it scarcely ever failed where properly used. Instances of systematic fraud, by substitution of colored water and other substances to evade the law are reported. The preparation of tuberculin and its mode of use may be omitted. As it contains no living germs it cannot communicate tuberculosis, and the testimony collected on this subject shows that its effects are temporary.

Schroeder injected 32 guinea pigs with the milk of cows which reacted to tuberculin. The milk, one and one-half ounces, was treated with the centerfuge and five c. c. of the sediment was injected into the peritoneal cavity. Bacteria and leucocytes were found in the sediment in all cases. No mention is made of bacilli. One case only was followed by tuberculosis. U. S. Department of Agriculture, Bulletin No. 7.

Such experiments have been made by others. As a rule they have not been successful, and yet Ernst and Hershfield have shown the milk of tuberculous cows is sometimes infectious even when the udder is not obviously affected.

But these negative experiments cannot be held to invalidate those in which milk of such origin has been followed by infection when fed. We must also remember that the feeding experiment goes on for months and years, and that the

chances for infection are thus many times multiplied. The same may be said concerning the use of the flesh of tuberculized animals. While it is a fact that chance infection by soiling with tubercular deposits may explain the infectiousness of meat in many instances, the experiments above cited from Lechlainche shows that the tubercles do develop in the muscular structures, although the glands and viscera are even in these cases the common source of infection.

How shall we meet this condition of affairs? Manifestly, we must treat all our food products with sufficient heat to destroy any tubercular germs. This may be aciscomplhed, as far as the milk is concerned, by Pasteurization. As for meats, they must be thoroughly cooked. All parts thereof must be exposed to at least 200 degrees Fahrenheit for a definite time. This direction applies alike to salted and smoked meats, for curing does not destroy the bacilli.

Investigations have shown that herd-raising people are the special victims of tuberculosis. The Tartar masters of the Chinese who raise herds and feed upon their products are scourged with consumption, while the poor, dirty starved native who uses none of these as food escapes. The tribes of Central Asia who feed upon sheep, goats and mare's milk escape; a striking contrast to the fate of the herders of the Alpine uplands cited above.

During a recent visit to the city of Boston I called at the office of the Cattle Commission to learn their methods. Appropriations have been made as follows for the work of the commission: 1894, $35,000; 1895, $100,000; 1896, $300,000.

Massachusetts never does anything by halves, and being convinced there is a stern conflict to be waged with this foe of human life and of her animal industry, she has furnished the sinews of war with a lavish hand.

First, a quarantine has been established against the entrance of all cattle upon her territory, except when destined for immediate slaughter, unless they have been inoculated with tuberculin within a limited time before a permit is granted for bringing the animal into the state. All animals must be covered by such a permit, even when the owner brings the animal from his own farm in the adjoining states to his farm in Massachusetts. All animals slaughtered for market are inspected, and passed if free from disease, otherwise condemned and rendered unfit for food. Tuberculin is used in all cases as the means of diagnosis, and the test is repeated if unsatisfactory.

When a diseased animal is killed, a nominal sum is paid therefor upon appraisement, not exceeding sixty dollars. The state has been divided into districts, and a systematic test of all animals in the state is now being made. The stables in which the infected cattle have been kept are thoroughly renovated, and mercuric chlorid and carbolic acid in solution are used to saturate the mangers, floors, stalls, etc., and the woodwork is washed. By keeping all infected cattle out of the state, killing all infected cattle in the state, and by rigorous hygienic measures, the Cattle Commission expects to banish bovine tuberculosis from the state.

Such drastic measures have not been supported without protest, and as a result more conservative men have found a place on the Commission, and milder measures have been adopted.

A hint of how we may proceed without destroying or impairing an industry may be derived from the methods in use in Denmark. This country is about one-third of the size of Ohio, and has a population of 2,200,000 people and 1,700,000 cattle. The exports from the products amount to $10 per capita. Tuberculosis has been found in over 38 per cent. of the animals tested. Destruction of their herds meant destruction to the people. Bangs, who has been in

charge of the work of supression of tuberculosis among cattle, proceeded in the following manner:—

All suspected herds are tested with tuberculin and those animals which are, separated from those which are not. The animals which are far advanced in the disease are killed. The animals which have been exposed are retested from time to time with tuberculin. When these animals react they are, when possible, fattened. The carcasses of all such animals are inspected, and if the disease is localized, the diseased parts are removed with care so that the flesh is not soiled with the tubercular products, and the rest is sold for food. This course is recommended by Nocard and Bangs, believing that by exposure of the flesh and milk to a temperature of 185 F .the risk of infection from meat and milk may be minimized.

In Denmark, the milk of tuberculized cows is heated to 185 F. and then used in making butter. The skim milk, which is fed to animals, is thus heated also. It must be borne in mind that the isolation of sound and sick cattle is complete and permanent, and they are never allowed together in the same stable or pasture. The young cattle are separated from sick mothers and fed on the milk of sound cows.

CONCLUSION.

I. Tuberculosis in men and animals is due to one and the same cause, and is reciprocally communicable by inhalation, ingestion, and inoculation.

II. It can be limited by the same measures which have been found effectual in other microbic diseases.

III. The disease is much more infectious among animals than in men. This is especially true of cattle.

IV. Statistics in Europe and America show that tuberculosis is rapidly increasing among our herds of horned cattle.

V. Danger of infection of the human family by these infected herds will thus be increased.

Statistics of Massachusetts are said to show that the mortality in that state from consumption in 1848 was 42.7 per 10,000 population; in 1893 it was 22.7, a diminution of nearly 50 per cent. This is due to better sanitation, but this rate of mortality, which is about the same as it is in Ohio from consumption, proves that this is the most fatal disease which affects humanity.

No epidemic has ever been as fatal as consumption in modern times. All the contagious diseases reportable by law, do not equal in mortality that caused by tuberculosis. We have no cure yet for internal tuberculosis. We can only prevent. We must suppress all sources of infection as far as can be done. More important to humanity than any other work which can engage our attention is the supression of tuberculosis. An obvious portion of the work I have presented to you tonight. Your aid and support is needed, and I know will be rendered.

ADDRESS OF WELCOME.

BY

J. G. W. COWLES, ESQ., CLEVELAND, OHIO.

Mr. President and Gentlemen of the Ohio State Medical Society:

By the favor of your local committee of arrangements I am permitted to represent the citizens of Cleveland in extending to you a cordial welcome to our city for your 52nd annual meeting. No body of men can gather here having a stronger claim upon our hospitality. There is no profession in the advancement and achievements of which the people are more deeply concerned, or in which the intelligent public takes a greater pride and interest. We are all and

at all times your debtors. From the instant of birth to the article of death we depend on your skill; to bring us safely into life, to shield and help us on our pathway through this world, to delay as long as possible our exit from it, and at last to mitigate the pains of dissolution.

You are gathered here to learn, by mutual conference, and interchanges of experiences and opinions, how to perform these functions most effectively. And we laymen applaud the spirit of ambition and progressiveness which we observe as the distinguishing characteristic of the medical profession in these days. Indeed, neither in law nor in theology is there the opportunity for such progress and new develpment as lies open and inviting before the medical fraternity; for the reason that the practice of medicine is outgrowing history and tradition, is emancipating itself from empiricism, and has already occupied and is still exploring the wide fields of physical science, gaining therein knowledge to take the place of theory, and certainty gradually supplanting doubt as to both the causes and the remedies of disease. In fact medicine has of late become the most scientific of the three learned professions.

I have had special occasion to notice, and have done so with extreme satisfaction, the great improvement during the last four or five years in your profession in this city in these directions. The genius of the age—the scientific spirit—has possessed you, and has turned some other evil spirits out. For the love of science almost equals charity itself in suppressing selfish rivalries, envies and greed, and in uniting men of like pursuits and aims in co-operation for the common cause. Thus the standard of the profession has been elevated and its effectiveness increased.

This is true in the matter of state regulation in Ohio. A higher standard of professional education is required. The "two full courses of instruction in a medical school in this or a foreign country" formerly required, is changed to a four years' course of study in a college approved by the

state board of medical registration and examination, and a diploma of graduation from such a college now takes the place of the certificate of "any state or county medical society, as the legal authorization to practice medicine in this state.

Four years ago in speaking before a local medical society upon this subject, I said "The laws of Ohio are conspicuously defective in this regard. Other states are far in advance in the standard of professional education required;" and added, "the remedy is with the medical profession itself, and with its patrons, the people, in making and enforcing more stringent laws." I congratulate not only the 9,000 physicians of Ohio, but the millions of its population, that the standard has been raised to be equal to the best in our land.

The profession in this city during the same period has made marked advances. And this is due in large measure to the scientific spirit elevating the aim, raising the standard, creating enthusiasm for advancement, and thereby breaking up cliques and rivalries and enmities, and uniting all in a common purpose to do good work.

The Cleveland Medical Society, with its 400 members, though organized only three years ago, has done and is doing for the medical profession what the Chamber of Commerce has done during the same period for the city at large. It embraces the majority of the regular practitioners in the city, and 150 from the vicinity, and has the largest average attendance at its meetings of any medical society in the country. Its reports and discussions are of a high order:; its publications are widely read and quoted, and have done much to make Cleveland known as a growing center of medical education and influence. The Cuyahoga County Medical society with its 100 members, and its medico-legal section, continues to contribute likewise to the same end.

The profession is united in the Cleveland Library Association, which already has 7,000 volumes, with the

expectation of large and valuable additions thereto by gifts, and with a partly formed intention to secure before long a library building, which will also be the home of the societies, and a rallying place for the profession.

A strong impetus was given to medical education in Cleveland in 1889 by the gift of $250,000 by the late John L. Woods, which was used mostly in the erection and equipment of the college building of the Western Reserve University, at the corner of Erie and St. Clair streets. This gift was supplemented later by another from the same donor, for the endowment of four chairs in the same college —chemistry, anatomy, physiology, and pathology. With the addition of the chair of physical diagnosis, supported from the income of the college, the Western Reserve now has five paid professorships in its nineteen chairs of instruction, and thirty teachers, including subordinate instructors.

The College of Physicians and Surgeons has seventeen professorships, or thirty instructors, including subordinate positions, two of which, namely, Pathology and Bacteriology, and Chemistry are paid in full, and two, namely, Physiology and Anatomy, are half paid from the college income. This college, however, has the assurance of endowment for its professorships within a few years from the Ohio Wesleyan University under whose charter it is organized. The teaching force in both of these colleges is of a high order of ability; and much valuable work is being carried on along the lines of original investigation in bacteriology, experimental therapeutics, experimental surgery, and the causes of surgical diseases.

A marked and important impulse has thus been given to the cause of medical education in this city, which is not without its influence upon the profession throughout the state.

Incidentally, and as sharing in and helping on the progress noted, I may mention here in passing, the recent union of the two homeopathic medical colleges in this

city, making one strong and well equipped University of Medicine and Surgery, representing the 150 physicians of that school practicing in Cleveland. Their hospital, also on Huron street, is one of the best in the city.

The hospitals of the city have increased greatly of late in their capacity and general usefulness, not only to their patients, but to the profession. The City Hospital, maintained by the city, furnishes the largest amount of medical cases, invaluable for clinical material and aid in teaching. The Charity Hospital still holds its high rank, as for many years, in efficiency and usefulness. The new Cleveland General Hospital on Woodland avenue, connected with the College of Physicians and Surgeons, is well equipped and is a valuable addition to the service. Besides these the St. Alexis, the St. John's, and the St. Clair street are smaller hospitals doing good work. But the new Lakeside Hospital, to be opened about September 1st, is the most conspicuous and notable of our hospitals, both in its extent and in the perfection of its construction and equipment. It fully occupies a plat of about five acres, bounded by streets on three sides, and overlooking the lake on the fourth. The buildings are one and two story detached structures, connected by enclosed corridors. It has about 300 beds, including those for nurses, with every contrivance and appliance of the most modern design for the best surgical and medical treatment. It will hardly be second to any in the country, except in size, and in that regard is well proportioned to the city which has built and must sustain it. The land and buildings have cost half a million of dollars raised by free will offerings from our citizens, and its maintenance must be from the same source. Its appeal for endowment, we may be sure, will not be unheeded. The same liberality which has created the hospital will sustain and carry on its beneficent work.

In welcoming you to Cleveland, gentlemen, I have spoken only of its medical profession, its medical colleges and its

hospitals, on the theory that men are best pleased to hear concerning that of which they are a part. But you are also welcome to all that is beautiful, attractive, elevating and instructive in our good city; its schools, its colleges, its parks, its industries and its homes. Our city is not so fair as when its rural beauty gave it the name of the Forest City, and as when Euclid avenue was its pride and boast of world-wide fame, as itself, an unbroken park lined with palatial homes, in the days before business blocks, at intervals along its line, had invaded and begun to crowd out the nabobs' homes. But the city with its multiplied manufacturing industries, and its vast commerce by lake and railways, giving employment to increasing thousands, is far greater, stronger, richer, more productive and beneficient than when it was trying to live and thrive on rural freshness and beauty as its chief distinction.

To the city of Cleveland, such as it is, and all that it is, such as it has and all that it has, I welcome you as honored guests.

RESPONSE TO THE ADDRESS OF WELCOME

BY

DR. G. A. COLLAMORE, M. D., TOLEDO.

Mr. Cowles and Citizens of Cleveland: On the part of the Ohio State Medical Society I thank you for the generous welcome and kind invitations you have extended to us. We have assembled from every part of the state in your beautiful city, partly for mental improvement, partly for mental and physical recreation. We have left the exacting patient, the midnight summons, the wearying round of professional duty, for this metropolis of Ohio, to confirm our old friendships and, we hope, to form many new ones.

We, therefore, deeply appreciate your cordial welcome and promise to accept your hearty invitations. We mean to

appropriate all you have offered us, your beautiful lake, your marts of trade, your manufacturing plants, your public buildings, your temples of art and science, your hospitals and charitable institutions, everything that our time and your indulgence will permit. We expect to enjoy the hospitality of your men, the kind greetings of your matrons and the beauty and versatility of your maidens; so that when we leave this pleasant city, again to resume our burdens, we may feel that our time had been joyously as well as profitably spent, and regret that life was not one long visit to Cleveland.

CHAPTER IV.

A NEW METHOD OF APPLYING COCAINE FOR PRODUCING SURGICAL ANESTHESIA, WITH THE REPORT OF A CASE.

BY

GEORGE W. CRILE, M. D., CLEVELAND.

Mr. President: The case I will report illustrates a new method of applying cocaine for producing surgical anesthesia. It consists in cutting down on the nerve trunks, under local anesthesia, and anesthetizing them by an injection of a small quantity of cocaine into the nerve trunk. This immediately anesthetizes all the area supplied by the nerve trunk and it blocks all impulses that may ordinarily be transmitted. Thus it effectually prevents not only pain, but shock, also. Yesterday was the first time I have had an opportunity of testing this, in making an amputation of the leg in a boy seven years of age. The operation was completed without his knowing it.

DISCUSSION.

DR. WM. E. WIRT, Cleveland: I would like to ask the Doctor if he injected simply one nerve in this particular amputation, and the nerve he injected, so that we may understand it a little more thoroughly.

DR. A. R. BAKER, Cleveland: I would like the Doctor to give us a few statements in regard to the experiments he has made on the effect of cocaine on the larynx in dogs.

DR. C. W. SMITH, Cleveland: What effects are shown in the nerve trunk, itself, as the result of the injection?

DR. FRANK E. BUNTS: I would like to draw out some information as to the length of time of operation and the special advantages to be derived from this method.

DR. E. G. CARPENTER, Cleveland: Even if the use of cocaine in operative procedures were successful, it occurs to me that oftentimes the cocaine would produce bad cerebral effects. I think that anyone who has used cocaine to any extent, especially in urethral operations, will at some time encounter a case in which it causes a great deal of cerebral excitement. Even if it caused anesthesia sufficient for operation, it is a question whether the operator would not find himself in a predicament from excessive cerebral excitement.

DR. WM. E. WIRT, Cleveland: The Doctor has made the broad statement in regard to shock following operation. I would like him to specify more clearly as to the influence on the circulation and the heart, and in that way we may draw some conclusions as to its direct influence.

DR. J. C. OLIVER, Cincinnati: This subject is a very interesting one, and I would like to know the condition for which the operation was done. It is a well known fact that in certain pathological conditions the shock is an insignificant mat er anyway. It would be interesting to know whether this was an amputation for a trauma or for some pathological condition in the extremity.

DR. RUFUS B. HALL, Cincinnati: Will the Doctor give us the technique of injecting the nerve trunk?

The discussion was closed by the author.

Mr. President: The technique employed in the case reported was based upon an extended research into the effect of cocaine upon nerve tissue, more especially nerve trunks. If, in an experiment, say on a dog, under surgical anaesthesia, while the blood pressure and the respirations are traced on a smoked drum, the paw is severely pinched, cut, or burned, the heart beats will increase in force and frequency, the blood pressure will rise, the respirations will also be accelerated; in a short time the blood pressure and the respirations return to normal or fall below normal action. The repetition of such phenomena by repeated stimuli develops shock.

Now, if before such stimuli in such a given case be applied, cocaine is injected into the nerve trunks supplying the area to be injured, no effect upon either the respiration or the heart is produced. At the same time voluntary motion of the part included in the block is lost. Convulsive discharges are "blocked." Electrical stimulation above the

"block" no matter how strong the current, is completely "blocked." The spinal cord may be blocked cutting off all communication between the brain and the blocked area.

General anaesthesia does not "block" the afferent impulses which cause shock. Cocaine injected into a nerve trunk does.

On the human subject I have observed "blocking" of heat and cold, pressure sense, and the sense of location and muscular sense as well.

In reply to Dr. Wirt, I injected the anterior crural and the sciatic nerves. The general statement just made will indicate the reasons why no shock may be expected in doing operations within a "blocked" area.

In reply to Dr. Baker's question, I found that the local application of cocaine upon the laryngeal mucosa invariably prevented the powerful, and often dangerous reflex inhibitory impulses upon the heart and the respiration in manipulation of the larynx, either intra or extra laryngeal.

I would say in reply to Dr. Smith's question, that clinically no functional disturbance has resulted in the several cases observed. Mosso and Francois Frank state that no chemical combination takes place between protoplasm and cocaine, and that no permanent impairment follows. This is in accord with the recovery experiments I have made on dogs.

In reply to Dr. Bunts, the anaesthetic effects continue about 30 minutes, but if more time be required the nerve trunks may be reinjected.

The advantages of the method consist in providing a means of making an operation safely on a critical case, it obviates the necessity for general anaesthesia, in cases of contraindication to general anaesthesia, this method might be employed not infrequently when assistance cannot be had the operation may be performed alone. Finally under many other circumstances it would be the method of choice as being safer, and to be preferred by the patient.

In reply to Dr. Carpenter: The amount of cocaine in any event would be so small as to wholly eliminate the danger of cerebral excitement. Amputation of a limb could not require more than $\frac{1}{8}$ to $\frac{1}{10}$ gr. A considerable quantity of this does not reach the circulation as it may be recovered on incising the tissue. In reply to Dr. Oliver's question, I would say the amputation was done on account of

trauma, occurring three days previously. An unsuccessful attempt had been made to save the limb. At time of amputation the temperature was 104.4, pulse 160. The pulse was counted before, during, and after the operation, and neither the pulse, nor the respiration were affected by the operation. The patient supposed his leg was being dressed, and only the noise of the saw attracted his attention. In reply to Dr. Hall: The nerve trunks are exposed by infiltration anaesthesia, the sheath of the nerve is first injected and after a minute or two the nerve trunk. This may cause a momentary pain. Finally, I wish to thank the gentlemen for their kindly discussion of the subject.

ASEPTIC TECHNIQUE OF MINOR SURGERY.

BY

W. J. MEANS, A. M., M. D., COLUMBUS, OHIO.

Surgeon to Protestant Hospital; Prof. Emergency Surgery Ohio Medical University; Member of the American Medical Association; Etc.

With the promulgation of the theory of germs as the disturbing factor in wounds, and the treatment of these disturbances predicted upon the idea of destroying the germs by the use of germacidal solutions, there dawned upon the surgical world a new era. Listerism which was, and now is, synonymous with antisepsis and asepsis, gave to the profession an impetus in surgery that has led to achievements that seemed incredible even a decade in the past. While the original idea of Lister remains as the fundamental principle of modern aseptic technique, yet in the evolution of the theory, sprays, vapors and medicated solutions, have been relegated largely to the past, and a better, more practical, and more scientific method has been adopted in modern asepsis.

In this evolution we find that the profession generally, has kept apace with the investigators, and has been ready to adopt each and every new method that promises something better than the old one. I confess, however, that in

the kaleidoscopic changes taking place, the physician becomes confused and is often in doubt in making a selection, whether this method or that one, is the better.

It is not for the purpose of proposing any new or advanced ideas in asepsis that I have chosen this subject, but rather to insist that aseptic technique of minor surgery as done by the general practitioner, does not compare favorably with the major work done by the special surgeon in the hospitals; and, further, to insist that just as careful and thorough asepsis should be done, and can be, by the general practitioner as by the specialist. The only requirements are a practical knowledge of the principles of ascepticism, and a willingness to comply with the necessary steps to carry them into practice. There is a wide and profitable field for the general practitioner who is willing to study the principles of modern asepsis and apply them intelligently in his general work. One of the first and most important things to do is to unlearn the lesson, seemingly so well learned, that the germacidal potency of medicinal solutions is all powerful to prevent infection. The physician who dresses a wound or amputates a finger with unclean hands, unsterilized instruments and dressings, depending upon a solution of bichloride of mercury or carbolic acid, made with unsterilized water, to destroy the microbes, certainly does not comprehend the true meaning of ascepticism, and overestimates the potency of these agents. To fully grasp the modern idea of sterilization and disinfection, it is well to understand the difference between antisepsis and asepsis. The one is rendering the wound sterile by the use of germacidal solutions, and the other, sterilizing the wound by removing the germs with soap and water or by any other mechanical agent that will thoroughly cleanse. Both methods have the same end in view —that of disinfection, but differ widely in their application. The aseptic method is practically prophylactic. It does away with the irritating agents that so frequently prove

destructive to the tissues, thus defeating primary union, even when the germs are destroyed. Antisepsis as applied by many physicians, cannot be condemned too strongly. Attempts toward sterilizing a wound or field for operation, hands, dressings, instruments, etc., with solutions of chemical agents that are safe to the tissues, are, in the light of modern bacteriology, absurd and unscientific.

To approach the treatment of wounds or an operation in an intelligent manner, the physician must have a clear understanding of the role played by micro-organisms in the disturbances that may arise therein, their methods of entrance, their propogation and their destruction. Without such knowledge the physician should turn away from wounds and leave the scalpel untouched.

In the treatment of every wound there are three elements to be considered—the tissues, the blood and specific irritants. The tissues compose the parts that make up the anatomical formations. With the full understanding that each tissue is reproduced by its own cells, there can be no mistake in preparing the parts so that coaptation of like structures will be made. The repair of tissues by cell proliferation does not come within the scope of this article and I therefore, have mentioned the above facts, merely as incident to the first step towards obtaining primary union. The physiological function of the blood in the repair and protection of wounds is an interestiug and important study. The blood supplies the nutritive elements necessary to regeneration, and at the same time through its leucocytes and current, furnishes defenses against the invading germs. These properties of the blood can be profitably studied in relation to the aseptic management of wounds. The phagocytic action of the leucocytes is a theoretical subject for the histologist and the discussion of which is scarcely admissible here. Concerning the mechanical properties, it is well known to operators that as long as there is a flow of blood from a wound, there is not much danger of infection.

While this is true, the converse is also true, that a stasis of blood will furnish a generating medium for the propogation of germs.

Under specific irritants I will class the bacteria that produce the condition in wounds known as inflammation, and subsequent necrosis. Suppuration is the product of the war waged between the germs of invasion and nature's guardsmen, and represents the death of the combatants. When the surgeon is called upon to treat a wound or to make an operation, his first care should be to render the parts entirely aseptic, or, in other words, entirely free from irritating microbes. To do this, he should have an intelligent idea—First, of the virulence of the different forms of bacteria; second, the effect of association of bacteria with other matter; third, of the hereditary influence over bacteria, which covers the ground of immunity both acquired and natural; fourth, of the effect of the environments and personal habits of the patient upon bacteria. These propositions I make suggestively for further investigation as materially affecting the results of all surgical operations. The sources of bacteria should be well understood. An operator who ignores the fact that certain portions of the body are nursery beds for virulent bacteria and takes no special precautions against them, is liable to get infection because of his negligence. Operations upon the toes, in the axillae, about the mouth, ears, etc., are liable to be followed by infection, unless extra care has been taken. The skin has bacteria to "the manor born." Therefore, the necessity of careful attention, even in parts not specially adapted to their culture. Other sources of infection are from contact, such as the hands of the operator, instruments, and dressings. Infection from the atmosphere is not as potent a factor as supposed to be in the past, and yet, the danger from dust-charged air should not be ignored

The subject of autoinfection or intoxication should be carefully studied. Every abdominal surgeon understands

the danger from the intestinal tract being filled with fecal matter, and therefore, has the patient's intestinal track thoroughly emptied before an operation, and again, thirty-six hours hours after the operation. I merely call attention to this subject as a factor and leave the question as to the probable sources and production of these auto-intoxicants to the hearer.

With a practical knowledge of the sources of infection, the defenses against the invasion of micro-organisms are better understood. Nature has provided some natural defenses that the physician should know and respect. The epidermis is one of them and should be carefully preserved; especially is this true in subcutaneous wounds, contusions, burns, scalds, and sub-acute inflammatory troubles. This leads me to depricate the use of any irritating or escharotic agent in sufficient strength to destroy the epidermis, in the treatment of the troubles before mentioned. When the epidermis is removed, the absorbants are open for the entrance of germs that may lead to almost direct infection of the injured parts. In sub-acute inflammatory troubles, especially of the joints a non-purlent condition may become purulent in a short time, from the use of blisters, or other agents that destroy the epidermis and open nature's highways for the invasion of the enemy. The blood, as mentioned above, makes a natural defense. The mechanical defenses are soap, water, brush, towles and sterilized dressings. In the sterilization of wounds, or in preparing the field for operation the purpose is that of absolute cleanliness. This cannot be too strongly emphasized. To cleanse a wound or the field for operation thoroughly, requires the use of pure soap, boiled water, sterilized vessels, basin, brush and towels. I seldom use any other soap than the tincture of green soap. It is pure and efficient. Much of the soap on the market is made by the cold process, and is not pure. Boiled water can be obtained in a few minutes, and then the implements used can be sterilized before be-

ginning the cleansing process. The question is often asked, "how can we determine when the parts are sterilized? It is a pertinent one, and the only scientific way to answer it is by *bacteriological tests*. This, however, is not practical in an office, so we must determine by sight and experience. The results in a given number of cases treated in a certain manner establish the value of the method and form a basis from which correct conclusions can be drawn. The length of time devoted to washing is problematical. More depends upon the vigor of the workman and implements used, than upon the time. One surgeon, by an intelligent application of brush, soap and water, can sterilize his hands, a wound or field for operation in one-fifth of the time that another can who uses these implements in an indifferent manner. A practical suggestion that materially affects the ultimate results, occurs to me here. This suggestion is, wash the hands, or other parts mentioned, in running water. The ordinary method of dipping the hands or brush into the bowl, soon renders the water unclean. This suggestion pertains to washing the wound as well. The question of using some antiseptic solution to finish the cleansing is an open one. In minor surgery I doubt the utility of such a course. My objections to their use are, the irritating effects on the tissues, if used in sufficient strength to act as a germicide. If they do not kill the germ, then they are useless. In order that the hands of the surgeon may be thoroughly and easily cleansed, the skin should be smooth. But after using these irritating washes, the skin becomes very rough, and therefore, catches dirt easily, and is hard to cleanse.

During the washing, the nails should receive considerable attention, owing to the fact that germs find a congenial soil under the projecting parts and around the margins. It is necessary to use a nail cleaner followed by a stiff brush. It has been the habit of many good surgeons to use an antiseptic wash as a

final cleansing agent for the hands. A solution of permanganate of potash was a favorite wash for a long time, but I believe it has largely gone out of use. Carbolic acid has been used a great deal, but owing to its unpleasant effects upon the skin it is not very popular, and certainly of no particular benefit. Bichloride of mercury is perhaps, the most popular antiseptic, but its use is more from habit than from any substantial germacidal properties it may possess. The latest antiseptic wash knocking for admittance, is the chloride of lime in connection with sal. soda as suggested by Dr. Wyeth in a recent issue of the *Medical Record*. The results may be all that are claimed by the writer, but it occurs to me that the offensive odor is a serious objection to its use in general practice.

The foregoing suggestions apply also to cleansing the wound or field for operation. Towels moistened in a one to one thousand solution of bichloride of mercury, placed around the parts are admissible, and, perhaps, useful. They serve to protect the operator's hands and the instruments from coming in contact with unsterilized clothing.

After a consideration of all these different methods we come back to the aseptic idea, and obtain asepsis through the use of soap and water as suggested. For all practical purposes in minor surgery, nothing more is needed.

Sterilization of instruments is not such a difficult matter, and yet, one that is quite as necessary as cleanliness of the hands. If instruments have been thoroughly cleaned, they can be sterilized in a few minutes in boiling water. It is a matter of choice whether they be put in an antiseptic solution or not, during the operation. In office work, or in general surgical work, outside of the operating room, it may be safer to keep the instruments in a three per cent. solution of carbolic acid, thereby avoiding infection from contact with unsterilized surroundings. All this is predicated upon the instruments being well cleaned before sterilizing. Such suggestions would scarcely be applicable in a hospital,

where nurses are trained to look after the instruments, but the converse is true in the physician's office.

Sutures and ligatures are an important part of the armamentarium and require considerable care in their selection, preservation, and sterilization. The best material for sutures for the general physician is silk or common thread. It is claimed that the Chinese braided silk is the proper material, but in my general work I have found that the common linen thread is just as good and is decidedly cheaper. The thread should be put on small wooden spools and kept in alcohol. When a suture is needed, sufficient material for the operation can be removed from the spool and put in the pan with the instruments and receive the same boiling. Owing to the fact that frequent boiling in water weakens thread, it is economy to prepare only enough for each operation. It is not always convenient to carry a jar containing specially prepared suture material. Under such circumstances I use the raw material after being thoroughly boiled, and have had no reason to be disappointed.

For ligatures, I prefer catgut, but, inasmuch as it is a very difficult matter to keep it sterile, even in the best appointed operating rooms, I suggest the use of that prepared by dry heat—(Boeckmann). It is economical if used alone for ligatures, convenient to carry, and reliable.

No other suture or ligature material need be considered. Silver wire, silkworm gut, and kangaroo tendon, are all valuable in special work, but for minor surgery they are not needed.

The next important subject is dressings. The physician should have a definite and fixed idea about the purpose of dressings. The old idea that they contain healing powers has long since been abandoned. Dressings are for protection, immobilization and absorption. Therefore, in selecting dressings, these properties should be alone considered. Plain gauze prepared by the manufac-

turer, absorbent cotton, muslin bandages, and flexible collodion fill the requirements. These should be sterilized before using them. No physician should be without some kind of sterilizing apparatus. It need not be complicated. Martin, of Chicago, in his little work on the treatment of uterine fibroids describes an apparatus consisting of a stand containing seven large test tubes, two inches in diameter and eight inches in length. Gauze can be placed in these tubes; also cotton and other materials that should be sterilized. The mouths of the tubes are filled with cotton, and the stand placed in a sterilizer or into an oven of any ordinary stove. The material thus treated will remain sterile for some time, especially if a rubber top be slipped over the mouth of the tubes. If iodoform gauze be used, it should be subjected to the same process. It is well to remember here that the medicated gauzes put up by the manufacturers do not remain sterile after being opened. Physicians who pin their aseptic faith to iodoform gauze as it is taken from the commercial jars, for a sterile dressing, are liable to be disappointed. For more than a year in the Protestant hospital of Columbus, iodoform gauze has not been used as a dressing on fresh wounds, except in tubercular patients; and better results are now obtained than before. The trouble, no doubt, arose from the idea that iodoform gauze prepared sterile, remained so, and it was used without resterilizing before each operation. We use the plain gauze and absorbent cotton. In all the major word the dressings for each case are put in separate packages and sterilized, so there is no exposure before using them.

While such care is not practical for a physician in his office, yet, with an apparatus as devised by Martin, sterile dressings can be kept. Subsequent dressings of wounds should be made with just as much care as the primary ones. With this fact in view it becomes almost a necessity that some sterilizer be used. Sponges are an important part of the surgeon's armamentarium. I never use any other ma-

terial in office practice than absorbent cotton. I find it efficient, clean and economical. The sea sponge is a dangerous material. The barbers have found it out, and seldom use it on the face of their customers. The physician should certainly be as wise as the barber.

Antiseptic powders are "a delusion and a snare," and should never be used on fresh wounds. They perhaps have a limited field of usefulness on granulating surfaces. A very good antiseptic dressing, if such should be desired, and one that is practical, is to saturate the gauze after it has been placed on the wound with a fluid composed of eighty parts of a saturated solution of borascic acid, fifteen parts of glycerine and five parts of alcohol. This fluid acts as an antiseptic and if made sterile by boiling, makes a good protective agent. It conforms the dressings to the wounded surface and the glycerine prevents the gauze from adhering, and maintains hygroscopic properties. Protective material such as rubber, oiled paper or silk, should not be used over the dressings; they prevent the evaporation of the discharges from the wound and the skin, and thereby produce a moisture that may be a nursery for the growth of the bacteria. In minor surgical operations about the face, where the field is entirely sterilized, one of the best dressings is flexible collodion. In plastic operations about the face or head, it is very desirable to avoid cumberson dressings, and at the same time, protect the wound. I frequently close wounds about the face with a subcuticular suture and then apply collodion. There is no advantage in adding iodoform to the collodion.

My purpose in this paper has been to outline a practical aseptic technique for the general physician, who is called upon almost daily to dress some trivial wound, or perform some minor operation in his office. I believe that with a clean wound, and a clean field for operation, clean hands, instruments and dressings, minor surgery can be done just as successfully in a physician's office as in any other well

appointed operating room. I have no hesitancy in doing plastic operations in my office, such as skin grafting, hare lip, etc. These are regarded as being very susceptible to infection, and hence, require the most careful asepsis.

In conclusion I will summarize the ideas that I wish to emphasize in the foregoing article.

First—A general knowledge of the micro organisms, their life histories, and relations to wound infection, is necessary as a preliminary step to aseptic and antiseptic treatment of wounds.

Second—That germacidal solutions are powerless to render septic wounds sterile.

Third—That thorough washing with pure soap, sterile water and clean brush and towels, is the only way to render a wound or field for operation, sterile.

Fourth—That dressings, ordinarily, should have for their purpose protection, absorption and immobilization, and should be sterile rather than antiseptic.

Fifth—That antiseptic powders are not sterile and therefore, should not be used on fresh wounds.

Sixth—That medicated gauzes become infected after exposure and if used at all should be resterlized.

DISCUSSION.

Dr. L. B. TUCKERMAN, Cleveland: Aseptic surgery, it seems to me, may be summed up in four things: Hands clean, field clean, dressings clean, tools clean. Complaint was made about the irritant character of most antiseptic washes. My own experience is not sufficient, but on the authority of Philadelphia authorities I may speak of one, that is, a saturated solution of acetanelid in alcohol. It is stated that acetanelid will kill microorganisms, and is is absolutely nonirritant to the skin and can be used frequently and in any amount without trouble. I do not know whether the use of iodoform gauze having been stopped in Columbus is in consequence of the shafts of wit which our ex-president, Dr. Milliken, directed against it at our last meeting, but it is a curious coincident that it is just about one year since they stopped using it.

With the permission of the society, I would like to exhibit a sterlizing apparatus I use in private practice. I have no hospital and I have been compelled to do operating often under unfortunate circumstances with regard to asepsis. There is nothing original about the pattern of this sterilizer. Dr. Buechner, of Youngstown, brought one up and I copied it. The thing I value most is the lamp, one which I got up on an emergency. It is an alcohol lamp, which contains about half a gallon of alcohol, will burn two or three hours at a stretch and is always ready to go off. Each burner has a central draft. It has also a special chimney, which I devised after some little labor. This is made of tin with an asbestos lining. It was made for me by a tinman, who exchanges work with me occasionally.

Closing remarks by the author.

Mr. President: The remarks of Dr. Tuckerman were not upon the merits or demerits of my paper, but rather innuendo upon the reference I made to the disuse of iodoform gauze in all but tuberculous cases. My purpose in the paper is to impress the general practitioner with the fact that asepsis is the watchword of modern surgery, and that it can only be obtained by carefully observing all the details of cleanliness and the use of sterilized material. And further, that the material, such as cotton, gauzes and sutures bought of the supply houses cannot be depended upon as aseptic. To emphasize this idea, I mentioned the use of iodoform gauze in the Protestant Hospital of Columbus.

THE ASEPTIC TREATMENT OF RETENTION OF THE URINE

BY

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The head of the penis and the urethra are the habitat of several varieties of micro-organisms, some of them capable of producing pathological effects when carried into the bladder or when invading the peri-urethral tissues through

a trifling wound. While a healthy bladder has a certain power of resistance which may enable it to cope successfully with an infection of moderate intensity, quite the reverse is true of one habitually distended, such as may be encountered in cases of enlarged prostate. The deposit of micro-organisms in a bladder impaired from whatever cause, may prove the starting point of a septic process which terminates only with the death of the sufferer.

Simple urethral fever, prostatitis, epididymitis, ureteritis, pyelo-nephritis, and pyemia are probably only varied manifestations of the same group of bacterial poisons. It is therefore a matter of the greatest importance that the use of instruments in the urethra and bladder should be accompanied with the most careful antiseptic and aseptic measures.

It must be admitted that no germicide, no aseptic method, will accomplish the result desired, viz: complete removal of pathogenic organisms from the field of operation. But though perfection is impossible under existing conditions, it should be our aim, and fewer disasters will follow the use of the catheter.

When the physician is about to empty the bladder by instrument he should have in mind a certain definite routine to be followed, the object of which is three-fold;

(1) Sterilization of penis and urethra of the patient.

(2) Sterilization of instruments and hands of physician.

(3) Maintainance of the sterile condition until the operation is finished.

Sterilization implies both cleanliness or asepsis, and antisepsis or the use of germicides—the former being probably the more important and essential of the two.

One principle—a *sine qua non* to success—must be kept constantly in view. No object when once sterilized, shall be allowed to come in contact with any unsterilized object.

If such contact does occur, immediate resterilization is necessary. It is with reference to this point more than any

other that we fail in carrying out the details of a perfect aseptic technique. For example, our precautions are in vain if we lay a sterilized catheter on the bed or table, until ready to use it; or if with well cleaned hands we draw the cork from a solid bottle and proceed at once to the handling of sterilized articles. It would be well for all of us to remember that cleanliness in dealing with the bladder is just as imperative as in the lying-in chamber. For the possibility of infection is quite as great, though fatal results may not be so frequent. That which has been said applies quite as strongly to the hands of the operator as to instruments used.

The following might serve as a description of one method of aseptic catheterization, the steps being of course subject to variations to suit circumstances.

The necessary articles will be:

(1) Scrubbing brush.

(2) Catheter (rubber, woven, metallic, glass).

(3) Lubricant. Boroglyceride in glass-stoppered bottle, or vaseline, sterilized in tin tubes, such as are used for artists' colors.

(4) A small glass syringe.

(5) Towel, basin and dish.

(6) Bichloride of mercury or carbolic acid.

Let some member of the family scrub thoroughly and rinse repeatedly a granite-ware basin and a vegetable dish, holding one pint or more. I assume that these two articles or their equivalent can be found in any household. Put in the basin one pint of water from the kettle and a teaspoonful of carbonate of soda. Boil in this solution for five minutes the catheters, and an ordinary glass syringe, both having been cleaned before placing in the soda solution. Mix ordinary weak carbolic or bichloride solution in the vegetable dish, (after scrubbing it thoroughly outside and inside), using by preference water from the kettle.

Now, the physician should scrub his own hands, being sure as to the condition of his finger nails, rinse them well and dip in the antiseptic solution. Put to soak in the solution a small clean towel. The penis is now to be cleansed by scrubbing and rinsing, devoting particular care to the meatus. Lay the antiseptic towel over thighs and abdomen in such manner as to leave the penis exposed. If there be some urethral discharge, wash the anterior urethra repeatedly with the syringe and antiseptic solution. Take catheter from basin in which it was boiled, and lubricate it with boroglyceride, poured onto it from bottle in the hands of assistant or a member of family, and introduce it.

After use of the catheter scrub and rinse it and inject antiseptic solution through it. Put it away in a clean towel, or boil it again and put it away in carbolic solution, in which case it is ready for future use at once.

Scrubbing the basin and dish used is recommended. Such articles, though put away clean after ordinary household use, are not surgically clean. A one or two per cent solution of carbonate of soda is especially appropriate for boiling glass or metallic instruments. It would probably prove rapidly destructive for soft catheters. The ordinary rubber catheter may be boiled in clear water, though such treatment undoubtedly shortens its period of usefulness. Woven catheters will not tolerate boiling, with exception of a special variety that is rather expensive.

In lubricating the catheter, as little of the lubricant as possible should be allowed to get into the eye of the instrument, for it is apt to accumulate in that portion of the catheter distal to the eye and constitute a trap for filth. Three or four per cent carbolic is the best antiseptic for immersion of either soft or hard catheter, since corrosive sublimate hardens rubber very rapidly and tarnishes metalic instruments.

Aseptic catheterization of the female can hardly be accomplished without exposure of the patient. The same routine must be followed as in the male.

Every medical man has encountered cases illustrating the persistent cystitis which may follow unclean catheterization in women. In many cases of retention repeated catheterization is necessary, sometimes at hours when the physican cannot be present. Generally the nurse, or a relative, can be trained to do the operation in a clean, safe manner. Doubtless some objector will say that this proceeding is tedious and cumbersome; that life is to short for so much pains in so trifling a matter. I admit that the rules of surgical cleanliness may be violated, possibly seven or eight times out of ten, with impunity. The other two or three cases, however, may be very unfortunate. We should bear in mind that it is to such cleanliness as that described, that modern surgery owes its advancement.

In a paper of the scope allotted me by the Society, but little attention can be given to the mechanical features encountered in cases of retention, and their influence on the aseptic progress of the case. In stricture of the urethra it is well to remember that no instrument that *can* pass an obstruction in the urethra, requires the exertion of any force to *make* it pass. Urethral instruments enter without the exertion of force or they should not pass at all. When resistance is encountered, either the instrument is too large or it is not in the right track; and when it is not in the right track, the slightest force may cause a wound of the unhealthy mucous membrane near the stricture with consequent extravasation and peri-urethral suppuration.

In the treatment of retention from enlarged prostate the soft catheter is indicated whenever it can be used, on account of distortion of the urethral canal and engorgement of the mucosa in the prostatic region. Hemdorrhage into the bladder is very common even after gentle instrumentation, and the resulting clot, if not evacuated, constitutes a

nidus for the growth and multiplication of bacteria. The first catheterization in these cases is attended with great responsibility, for the bladder lacks at first the tolerance to catheter life and septic organisms, which it acquires when the catheter has been used for months and years. This is well illustrated in cases of long standing inability to empty the bladder voluntarily; these patients disregard all rules of cleanliness and for a long time at least, escape the consequences. However, eventually, they too acquire, and succumb to, the aggravated cystitis and surgical kidney which we find in a final stage of this and other incurable inflammatory conditions of the genito-urinary tract.

THE USE OF DRY HEAT OF HIGH TEMPERATURE IN THE TREATMENT OF CHRONIC JOINT AFFECTIONS, WITH REPORT OF CASES

BY

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Something over three years ago I began experimental work in the use of dry heat in the treatment of chronic joint diseases. I was led to believe that a high temperature could be borne from my studies in physics, and from a knowledge of the high temperature borne by iron-workers. My first report on the subject was made in a paper read before The Mississippi Valley Medical Society, in October, 1895.

The apparatus used in applying the heat consists of a copper cylinder open at both ends, having four holes in the circumference for ventillation. Fitting into each end of the cylinder is a wooden ring or disc, to which is attached a hood which encircles the limb subjected to the heat. Thi

hood, which is made of double coated rubber cloth, is drawn firmly about the limb by means of puckering strings, and in this manner retains the heat in the cylinder around the joint.

My first cylinder was made of one piece of copper rolled into the shape of a cylinder. Naturally I have made a number of modifications since making the first cylinder, one of which changes is to make the cylinder of two halves hinged together, thus allowing the limb to be layed into the apparatus, and then the upper half is closed upon it.

A recent modification is to have the lower half of the cylinder double with an air space between the two, or rather an inner half cylinder of an inch less in diameter, with a half inch flange which is set down into the lower half of the cylinder. By this means the temperature is more equalized between the lower and upper halves—the hot air between the two cylinders is carried up against the upper half of the limb.

Heat is applied underneath the cylinder by means of a small gas stove on the Bunsen-burner principle, i. e. gas and air mixed. I have used oil lamps, gasoline and the alcohol flame, but when it is possible I prefer to use the gas flame.

In the practicable application of the apparatus I have found it necessary to encase the under third of the limb in cotton, which is held in place by loosely tied tapes. This was found necessary from the fact that the high temperature used caused such profuse perspiration from the joint that the moisture ran from the skin in drops, which falling to the bottom of the cylinder was instantly turned into steam, scalding the patient. The cotton takes up this prespiration, and the hot air quickly dries out the cotton. The cotton being applied, the limb (the knee for example) is placed into the apparatus, and the upper half of the cylinder is then swung shut, and the hoods are, by means of the puckering strings, drawn tightly around the calf and the thigh. The cylinder sets in a frame work at about the

height of an ordinary chair. The patient's foot is placed in a chair and raised to such a height that the calf touches nothing about the cylinder but the rubber hoods. If necessary, the patient may sit on a pillow in order to raise the thigh free from the wood rings in the cylinder. Everything being ready the gas is turned on and lighted. The joint is kept in the heated apparatus from thirty minutes to one hour, and the heat is used as often as three times a week, or in some instances daily.

The temperature ordinarily used is from 250° to 300°. In some cases I have carried the temperature as high as 350° to 400°. In one case on two occasions the bulb of the thermometer lay in the cotton at the side of the limb one inch from bare skin, and registered the extreme temperature of 450°. On the other hand I had blisters on two patients where the temperature registered was below 300°, and neither of the patients complained of the heat being excessive.

Heat and cold have been used for many ages to allay inflammation, but the moist heat, the form generally used, only permits a range of temperature seldom above 140° F. Very high temperatures have been used in the form of the cautery, but only for a moment of time, and its effect does not in any way parallel the effect of prolonged use of a temperature of 300 degrees.

The influence of these agents just named is determined firstly, by their power to modify the circulation; secondly, by their power to increase the lymphatic circulation; thirdly, by their modification of the secretions, and fourthly, by their action on the nerve supply to a part.

To make it a little plainer what these effects are, I will go somewhat into detail. By the use of a temperature as high as previously named, say from 250° F, to 300° F., the prespiration of the local part is so great that if not absorbed by the under layer of cotton, it will roll off rapidly in drops, and the whole amount evaporated in an hour is quite large.

The circulation of the blood is also greatly increased, which is very apparent on the surface, the part being reddened and the arterioles dilated, as is seen in the blush of an ery, sipelas. The pain and stiffness are greatly relieved.

Take for instance, an old case of gonorrhœal rheumatism, or rheumatoid arthritis, and we find at all times there is more or less pain with considerable stiffness, and the motions of the joint are accompanied with creaking sounds. At times there are exacerbations, when all these symptoms are considerably increased. It has been my experience in the use of the apparatus, that very soon after the temperature in the cylinder is raised to 250° the patient feels entirely relieved of the pain, and on removing the limb from the apparatus after the treatment, it is found that the mobility of the joint is considerably increased, and the creaking sounds have greatly diminished, or entirely disappeared, The marked effect of the heat is especially noticeable at the time of an exacerbation, when the difference in the condition of the joint before and after the treatment is considerable.

As illustration of the effect of the high temperature used, I will report several cases of my own, and quote from the letters received from several surgeons to whom I furnished the apparatus.

Case 1. Mrs. S. A. M., age 29. Diagnosis, Arthritis Deformans. No history of gout; no history of tuberculosis. Mother of patient complained some of rheumatism. On January 3, 1893, knee became painful, swollen and hot, but not changed in color. Was laid up in bed for three months. Used crutches for a while. Has limped ever since original attack. Has had milder attacks since. Limb about same as one year ago, but not so straight. Examination January 10, 1895. Knee swollen and increased in temperature. Fluctuation in joint. Outlines of knee changed somewhat. Ends of tibia and femur enlarged. Knee cannot be straightened beyond 160°. No

marked spasm of muscles. Treatment: Used four applications of the dry heat, two and three days apart, with considerable improvement. Flexion increased ten degrees. Knee less sensitive. Temperature used was 260° F., for forty minutes at a time.

Case II. F. M., age 20. Diagnosis, Ankylosis from acute rheumatic attack. Patient had suffered much from rheumatism since her seventh year. Would get it in feet, knees and arms. Mother of patient has suffered from rheumatism for many years. In April, 1894, had a severe attack of rheumatic fever from exposure to wet and cold. Was very sick, and in bed for three and one-half months. Got up on crutches with right knee drawn up. Examination February 19, 1895. Find barely preceptible amount of motion in right knee, any forced flexion or extension causes pain. Both knees of same temperature. Knee held at an angle of 105°. Normal motion in left knee following rheumatism. Treatment: Application of heat of a temperature of 290° F. for periods of an hour were used, with an idea that the adhesions in the joint might be loosened up. Finding that the adhesions remained firm after several applications of the heat, the patient was placed under ether and the adhesions were broken up—the limb being put in plaster of Paris in the straightened position. Complete paralysis below the knee, both of motion and sensation, followed the straightening of the limb. After keeping the knee in the plaster for a short time, the knee and calf were again subjected to the high temperature heating apparatus. Quite an amount (30 degrees) of free motion was soon established, and the paralysis was reduced to the lower half of the foot. At this time the patient went into the country, and was lost track of.

Case III. Dr. F. C. T. Diagnosis, rheumatism. The doctor had an attack of rheumatism during July of 1896. The usual treatment was carried out. When I saw him his knee was in plaster of Paris, and the doctor told me that

for three or four weeks he had made no progress. He sent for me to ask as to the advisibility of using hot air. I recommended the treatment, and about a week later I applied the heat to his knee. On removing his knee from the plaster prior to the treatment, I found the knee much swollen and exquisitely sensitive and painful on motion. With the greatest care we got his knee into the apparatus. The heat was applied forty minutes at a temperature of 270° F. The doctor soon declared that the knee felt better, and at the end of treatment on removal of the limb from the apparatus, the motions were freer and with less pain. The doctor continued the treatment two or three times a week for several weeks, at which time he felt well enough to go to Mt. Clemens. Here he received great benefit from their treatment, returning from Mt. Clemens able to walk fairly well with a cane. He again continued his treatments with hot air with decided benefit.

I have several times talked with the doctor about the condition of his knee and the benefits of this treatment. He tells me that whenever his knee pains from any cause as twist of the joint or the oncoming of a storm, he gets out the apparatus and gives his joint a good heating with the result of relief from all pain. At the present time he is riding a bicycle and has good use of his joint, and has a practically normal gait.

Case IV. Mrs. Anna T., age 66. Rheumatism in both hands—more marked in the left. Patient had a Colles fracture of the left wrist, which made the left hand more stiff than the right. Examination. The usual deformity of Colles fracture is found at the left wrist. The fingers of the left hand are considerably flexed, especially the fourth and fifth. The hand cannot be closed like the normal hand—in fact, only about one-third the usual motion is permitted. On attempting to extend the fingers, we find them blocked firmly, apparently by adhesions in the joint, instead of the stretching resistance found in shortened tissue.

The same condition holds in the right hand, though not to so marked a degree. Nine applications of the hot air, at an average of 310° were used, for forty minutes at a sitting, followed by twenty minutes of massage and passive motion. The treatments were given every other day, and at the end of the nine treatments the motion in all the joints of the fingers of the left hand were quite free, except in the little finger—here the motion was only fair. The patient and her daughter, who always accompanied her mother, were delighted with the results of the treatment.

The following letter from Dr. Frank S. Milbury, of Brooklyn, N. Y., is self explanatory.

On the first day of March, 1 A. M., 1894, when taking a chair down stairs, I slipped, flexing my left fore leg upon the thigh, and being a heavy man, weighing 205 pounds and about 5.11 tall, brought the joint on a sudden and heavy strain. Apparently, I felt something give way, the pain was very great, but being very busy professionally, and as my practice is confined exclusively to the eye, ear, nose and throat, and necessarily in the office, I attempted for a few days to attend to business, keeping off my feet as much as possible, believing that it was only a severe sprain, and would soon be well. However, in this, I was mistaken, as it grew rapidly worse, and in about eight days my knee was greatly swollen, and the pain very acute. I applied water as hot as could be borne for about fifteen minutes and then douched it with ice water—several gallons—after which I applied, with considerable friction, a palliative linament, and retired. This treatment was given night and morning, and always afforded great relief. The swelling and severe inflammation soon subsided. At the earliest possible moment I drove to New York to consult Dr. A. M. Phelps, 62 East 34th St., and after a careful examination he stated that in the fall two of the semi-lunar cartillages had been ruptured. He ordered me to wear an apparatus so as to keep the knee stiff when walking, and flexed on sitting, but advised abso-

lute quietness for a few months, which advice I followed to the letter. In addition to this he suggested the hot and cold applications followed by a brisk rubbing with a coarse towel, after which a chloral-camphor and morphia linament was applied and the knee wrapped with oiled silk, covered with flannel. The object was to generate heat and stimulate the parts. Improvement was marvellously rapid, and I was soon about, probably too soon for my own good, as a chronic condition ensued. This was contrary to the advice of Dr. Phelps, whose untiring patience and skill had placed me again on my feet and given me the use of my leg, but my business had become so impaired that I felt it absolutely necessary to look after it myself, instead of leaving it altogether in the hands of my assistant, who is a thoroughly good man in the work, but as you know, patients come to the principal. I wore the apparatus a little more than one year, and laid it aside. In spite of all we could do a rheumatic trouble ensued, and my knee was in a bad shape, and I was laid up again. About this time I noticed in one of my medical journals a review of an article published by Dr. Wm. E. Wirt, of Cleveland, Ohio. I communicated with him, and he kindly described to me in detail his methods of procedure and apparatus. I immediately had one constructed as near as possible to Dr. Wirt's, but in comparison it was no doubt very crude; however, through it, I applied dry heat twice daily, as hot as could be borne, and a rapid improvement began, so after a few weeks my knee appeared nearly well, and with an occasional application for about one year longer, I abandoned all treatment, since which time I have been entirely free from all trouble. I attribute my improvement latterally to the "hot air," and from the only experience I have had which is the best—my own—I consider the treatment perfectly logical, and a marked advance on other methods in vogue. I shall certainly consider that Dr. Wirt was the means of giving me a

useful leg again, and extend my sincerest thanks to him for his kind interest.

FRANK S. MILBURY,
215 Jefferson Ave., Brooklyn, N. Y.

CLEVELAND, O., June 26, 1896.

DR. WIRT.

DEAR SIR: Dr. Gilchrist tells me that you have kindly offered to let us have your apparatus again for a few days, as we would like to give Thompson one more sitting before letting him go. * * *

I will state that Thompson feels so much better that he speaks of leaving the Hospital on Monday, a thing he never suggested before the application of the heat. He said to-day that his left knee was bothering him a little again, so I guess we will give him another application on that leg to-morrow, with your permission. * * *

Thanking you for your kind offer, I am, Doctor,

Sincerely,

DR. L. P. H. BAHRENBURG.

The patient mentioned in the above letter was a man about 45 years old who was being treated for gonorrhœal rheumatism.

LOUISVILLE, KY., April 9, 1897.

DR. WM. E. WIRT, Cleveland, O.

DEAR DOCTOR: Your letter of the 7th just to hand, and I hasten to answer same. My experience with the hot-air drum has shown me that the present one in use has many disadvantages, and to overcome these I have designed one of my own that I will eventually present to the medical profession. The results of my work have so far been satisfactory, when it is followed by some radical measure such as general Hydrotheraphy, but otherwise its capacity is limited. I have, at present, some very interesting cases that are under my observation, but it is yet too soon to speak of its per-

manency of result. Trusting this will prove of service to you, I remain

Very truly yours,

CURRAN POPE.

I have modified the apparatus considerably since furnishing Dr. Pope the one he refers to.

BOSTON, MASS., April 15, 1897.

MY DEAR DOCTOR: Your letter has just been received and in regard to the hot air, it seems to me that it is a valuable adjunct in our department of medicine. I certainly have been able to get results by its use that I could not have gotten in any other way, or at least in the same length of time. I have quite a large amount of apparatus and it is in constant use here at my office.

Very truly yours,

JOEL E. GOLDTHWAIT.

DISCUSSION.

DR. DAVIDSON: I should like to ask the Doctor if he has applied for or secured a patent on the apparatus.

Answer: No, sir.

DR. DAVIDSON: I should also like to know how long he would continue the application.

DR. R. HARVEY REED: I take it for granted, from what the Doctor has said, that this apparatus is intended for the use of hot air where heat is indicated in cases of joint affection. I do not take it that he intends to use heat in all cases of joint affection. If he does, I certainly take issue with him.

DR. WIRT: I keep the part in the apparatus from half an hour to an hour, and I feel satisfied with a temperature of anything over 250°. Dr. Gibney, of New York, reported in January or February, six cases in which he used 250° to 300°. In regard to the cases, I use it in chronic cases. I would not use it in acute cases.

DR. DAVIDSON: Would you use it in sprains?

DR. WIRT: After the acute symptoms have passed off. I have used it in dislocations of the patella.

OPERATING BAG AND KIT

BY

JOHN E. RUSSELL, M. D., MT. VERNON, OHIO.

Fortunately for the society, the topic that has been assigned me by the courtesy of your worthy President, is one that can be handled with brevity, as the President in his address, and the gentlemen who follow me, detail the technique of the operations.

The operating bag and kit that I shall describe is one particularly adapted to the country practitioner.

He must of necessity have with him means to meet any emergency that may arise; he is remote from surgical instrument houses, other physicians' or his own office or operating room, and he must have in compact and convenient form not only all that is required for the performance of the operation but for the preparation of the apartment, the patient, his assistants and himself, so that he may give the patient the benefit of the all important condition and surroundings of practical asepsis—such as clean hands, clean field and clean instruments.

After an experience of more than ten years, with a constant effort to render more complete and no less compact, I follow with a description of my own operating bag and contents, not claiming however any originality of either design or equipment.

A leather cabin bag, size 16x8x9 inches, with straps on the inside of the lid or cover, and pockets in either end and along the sides; four pans of agate ware, size 8x10x1½ inches, a box 6x6x4 inches containing bottles for sublimate solution, carbolic acid, collodion and small graduate, powder sifter, sublimate soap and brush, with tin box containing two yards of gauze, ¼ pound absorbent cotton and one gauze bandage 3 inches by 10 yards.

In separate package enveloped in either parafined or oiled paper extra gauze, five yards, one-half pound absorbent cotton, two more bandages and several towels, all sterilized. Two ounces Squibbs chloroform in Esmarch's container with folding inhaler and tongue forcep, one-half pound Squibbs, ether, and Ford's rubber inhaler for same, exploring and aspirating syringe, irrigator, Kelly pad, razor, Esmarch bandage and torniquet bandage, scissors and dressing forceps, rubber adhesive plaster and oiled silk, drainage tubes assorted, jar containing suture assorted, silk from size 00 iron dyed, to coarse braided for ligature purpose, cat gut assorted, silk worm gut and kangaroo tendons, small sized general operating case, metallic, containing assortment of knives, three scalpels, curved and straight bistory and hernia knife, medium, amputating knife and capital saw, scissors curved and straight, groved director and probes, assortment of needles, including Marcy's herina needles, bone forcep, trephine and elevator, six hemostatic forceps, operating coat; weight complete, 24 pounds.

This might be more properly called an emergency bag and kit. You will readily see that I have means at hand to clean any table I may be compelled to use, the field for operation, my hands and the hands of my assistants and with reasonable ability to improvise. I believe the outfit herein described will enable me to enter with reasonable safety, as regards cleanliness, any of the cavities and perform almost any operation that might be required.

THE PRELIMINARY CONDUCT OF INTESTINAL OPERATIONS

BY

R. HARVEY REED, M. D., COLUMBUS, OHIO.

Professor of the Principles and Practice of Surgery and Clinical Surgery, Ohio Medical University; Surgeon to the Protestant and University Hospitals.

Among the many details essential to success in intestinal operations are the preliminary preparations. In the study of this subject, I shall confine myself entirely to operations on the intestinal tract and what I have to say is not intended to apply in any special manner to operations in general of the organs of the abdominal cavity.

It is said that custom makes law, and law is binding because everyone conforms to it. I think this applies to intestinal operations and at the same time, I think that many of us have conformed to a law, the result of custom, without ever stopping to consider the relations between the physiological effects of certain drugs used in these preparations and the pathological conditions for which operative interference is proposed.

For example, in intestinal obstruction, there are few diagnosticians who are able to tell prior to an exploratory incision the exact condition that is producing the obstruction. The symptoms may indicate obstruction beyond any question, but who can say whether it is an enterolith, cicatrical constriction, invagination, volvulus or even paralysis of the intestinal tract. It is a common custom to not only resort to cathartics and drastics in intestinal obstruction, but to continue their use until not only the entire mucous tract above the obstruction is intensely irritated, but the muscular and serous coats and congested and oftentimes they are found in an acute inflammatory condition with the presence of exudates and transudates in abundance.

Experience has led me to believe that the continued use of cathartics in any form of intestinal obstruction, not even excepting impaction, is injurious and unfits the patient for the most successful operation. The mildest cathartic is a stimulant to the glands of the intestinal mucous membrane, and as such is intended to increase the secretions and at the same time exaggerate the peristaltic action. If these are persisted in we are bound to set up *vis a tergo*, resulting in stercoraceous vomiting, and whenever that occurs, we know we have peristaltic action together with an obstruction of some kind, prohibiting the onward movement of the intestinal contents through their natural channel.

This being the fact, what reason have we either from a physiological or pathological standpoint to increase this peristalsis by giving drugs intended for that purpose. On the contrary the use of opiates may allay the pain, but that masks the symptoms and too frequently not only leads the patient and his friends, but the physician, astray, and causes them to think he is better, when in reality the pathological condition remains the same, or is possibly exaggerated. This may also occur when obstruction has continued sufficiently long to produce paralysis or gangrene, when in either case the pain subsides, the patient imagines he is better and not infrequently the attending physician is mislead by these very serious and usually fatal symptoms. Under these conditions can anyone present here to-day assign a reason for giving either simple or drastic cathartics except to aggravate the condition already existing?

I am sure there is not a general surgeon present to-day who has not operated repeatedly for intestinel obstruction and found the bowel congested or possibly necrotic and distended with secretions. This, of course, may occur in cases where there has been no irritation of the mucous membrane by medication, but in my experience, I have found less congestion, less secretion, less dilitation where cathartics have not been used than where they have. If

this is true in the experience of others we should be guarded in the use of laxatives, and especially in the use of drastic cathartics in all cases of intestinal obstruction.

I recall two cases of fecal impaction, in one of which the intestinal tract was completely obstructed by cherry stones to such an extent that nothing outside of mechanical interference would give relief. The other case was obstructed by hardened feces, necessitating operative interference, and in still another there was an obstruction by an enterolith the size of a walnut which had lodged at the ileo-cecal valve, producing complete obstruction. According to our text-books and according to custom these parties were all given cathartics and drastics irrespective of the stercoraceous vomiting and the intense intestinal pain. From irritation by these drugs the bowels were distended by secretions largely the result of over-stimulation of the glands of the mucous membrane. The intestines were congested to such an extent as to produce profuse transudations and in several cases exudations, placing each patient in a perilous condition without relieving mechanical obstruction in the least. The same principles hold true in circular constriction of the bowel whether of malignant or cicatrical origin. It also holds true where there is an obstruction by adhesive bands, volvulus or invagination, and I wish to enter my protest against the persistent use of cathartics under any and all of these conditions.

First, for the reason that as a rule they fail to relieve obstructions.

Second, for the reason that they produce unnecessary congestion and irritation of the intestinal tract and place the patient in greater peril.

Third, for the reason that it makes operative interference much more dangerous, because of the irritation produced by their use.

FAILURE TO RELIEVE OBSTRUCTION.

There are exceptions to all rules, but these exceptions only tend to prove the rule and while I believe that continued cathartics are injurious to the patient and as a rule fail to relieve the mechanical obstruction, it is true that occasionally we have patients who, after their use in severe obstruction, get well without operative interference. Among these exceptions I might mention two cases in which the obstruction was caused by invagination and after from fourteen to twenty days of absolute obstruction the proximal and distal ends of the bowel became adherent, the vaginated portions became necrotic, sloughed out and escaped with a gush of feces, and the patients got well. But, notwithstanding, I do not believe that it is to the best interest of the patient to continue the use of laxatives and much less the use of drastic cathartics when we have every symptom present indicating obstruction.

UNNECESSARY CONGESTION AND IRRITATION PRODUCED.

The fact that they produce irritation and oftentimes inflammation of the intestinal tract when persisted in, even in patients who are not suffering from an obstruction is to my mind sufficient evidence that they should not be continued, especially when we have obstruction, for the reason that this adds a serious complication to the existing pathological conditions, which we, as physicians and surgeons, should strive to avoid.

OPERATIVE INTERFERENCE MORE DANGEROUS.

It must be conceded by every operator that the less irritation there is, to the intestinal tract as well as the intestinal and parietal peritoneum, the more favorable the prognosis. This being true it is quite evident that a patient who must submit to an operation for intestinal obstruction is placed in more danger when he has the entire intestinal tract above the obstruction irritated by laxatives and

especially drastic cathartics. Under these circumstances, the surgeon must contend with not only inflammation but an increase of the intestinal contents which has been induced by the use of cathartics, saying nothing about the increased peristaltic action, which of necessity must interfere with any operation which may be performed which necessitates opening of the intestinal tract whether it be for an artificial anus, an anastamosis with the Senn bone plates, Murphy button, or the Lembert suture.

It is an indisputable fact that increased peristaltic action has a tendency to retard repair of intestinal wounds on the very same principles that the continued shaking up of a fracture retards repair of the bone, which should be immobilized and kept quiet.

On the same principle it is highly important that the intestinal tract should be as nearly immobilized as possible after an operation and kept so until the repair processes have advanced sufficiently far to insure against extravasation of the intestinal contents into the abdominal cavity. For these reasons alone I feel that I am justified in protesting against the use of cathartics prior to operation on the intestinal tract and that only remedies should be used which have a tendency to empty the intestinal canal without leaving the bowel in a state of irritation to complicate a dangerous operation which is to follow their use.

I am of the opinion that in all cases where intestinal obstruction is suspected and the use of mild remedies together with enemas fail to give relief, the use of drastic cathartics should be guarded against. I believe it is much safer to make an early exploratory incision, if need be, to effect a diagnosis, than it is to continue their use, from which there is always danger of setting up inflammation which of itself is a serious complication we should always seek to avoid.

DISCUSSION.

DR. L. B. TUCKERMAN, Cleveland: I am glad to see the ground the doctor is taking against the routine use of cathartics in obstruction of the bowels. The rule, as you know, in a case of appendicitis, is to give salts and if the patient gets worse to operate. It has always seemed to me that the giving of salts so very early in that condition of the bowel would render the surgeon's aid practically necessary, causing the flooding of an obstructed intestine with a lot of fluid. If anything would tend to cause a weakened intestinal wall to give way, that ballooning of the intestine would do so. I am glad to see Dr. Reed calling a halt on that procedure.

Remarks by DR. C. S. CHAMBERLIN, Kinsman: It seems to be accepted by the essayist, without question, that after a diagnosis of intestinal obstruction has been made it is customary to give cathartics and drastic purgatives. I do not believe that is true. After we make a diagnosis of intestinal obstruction very few of us, I think, give cathartics.

Closing remarks by the author.

It is said that it is usually necessary to have exceptions to prove the rule. I am glad that Dr. Chamberlin has been able to produce the necessary proof, that the assertions I have made in my paper regarding the use of cathartics in intestinal obstruction, are true.

THE SURGERY OF MALIGNANT DISEASE OF THE ORBIT

BY

ROBERT SATTLER, M. D., CINCINNATI, O.

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With isolated exceptions, only depressing experiences and disappointments have resulted from the most thorough surgery resorted to early and promptly for the relief of malignant disease of the orbit.

In fact, we must admit that even when practiced during the incipient or latent stages of malignant neoplasms, the

most unerring thoroughness in method and operative technique, resolves itself into a measure of expediency, affording at best only inadequate relief or freedom from suffering.

The radical removal of a new growth of malignant tendency, affords no assurance whatever of its effectual disappearance. On the contrary, when once its location, extent and morphological nature have been more definitely disclosed, it rather suggests its inevitable return. In the most favorable cases, the reappearance of the neoplasm is retarded, in others, unfortunately the largest number, its recurrence follows promptly and its subsequent course is often an incredibly rapid one.

If this holds good for malignant disease in general, it applies with especial emphasis to that which attacks the skull and in particular to one of its principal openings: *the orbit.* This cavity is a veritable stronghold for malignant disease and when once invaded by a growth which clinically and morphologically must be classed with this ill-fated category, it may as well be considered beyond the scope of successful surgical interference. It must be conceded that in this locality, surgery is not even attended by the same chances for success as in other regions of the skull in which by common consent it is considered uniformly unfavorable.

It is not surprising, therefore, that a surgeon views these sad cases with dread concern.

This applies with possibly one exception to all forms of malignant disease met with in the orbit, either as a primary, secondary or consecutive manifestation.

The reasons for this are obvious.

In the orbit, so many recesses and direct communications with the cranial cavity exist and the lymphatic, venous and arterial channels are so numerous and intricate, that neoplasms starting in adjacent regions or cavities, can encroach upon its territory. Or a primary intra-orbital neoplasm, spreads its destructive work by direct extension along the optic nerve or the principal venous or arterial

channels to the brain, or by the same channels or the lymphatics, through metastasis to other remote parts of the body.

The framework of the orbit is composed of bones which enter into the formation of other important cavities and openings, and for this reason, growths of the upper jaw, frontal bone and the maxillary, frontal, ethmoidal and even sphenoidal sinuses are not infrequently met with, attended by conspicuous consecutive manifestations in the orbit.

The most dreaded primary malignant new growths are those which begin as sub-periosteal ones, either in the roof or floor of the cavity, from the frontal or superior maxillary bones and from the deep connective tissue of the muscles and other structures in the apex. Both bear to the practiced observer from the very beginning the stamp of fatality and utter hopelessness.

Surgical interference will invariably be resented and prove useless, and in most instances an incredibly rapid course will be its inevitable sequence.

If the neoplasm is secondary and appears under one of its most treacherous garbs in the eye itself (where it begins as an intro-ocular glioma or sarcoma), its course may be masked at first, but its subsequent declaration and progress are equally rapid and fatal.

As already stated there is for these unfortunate cases no surgery which holds out more than a partial and temporary relief from suffering.

During the early stages an exploratory operation, to determine the nature of the growth and its exact location and attachment, is not alone justifiable, but indicated. In the more advanced stages, surgery becomes wholly a measure of expediency, with but one object to be accomplished, *i. e.*, afford relief by lessening suffering and averting exhausting hemorrhages, and possibly retard an otherwise more rapid progress. What this operative interference shall consist in, can only be determined by the judgment

of the surgeon and the special indications in particular cases. Disappointment, greater suffering, a more rapid course must invariably follow radical surgery undertaken with the hope to eradicate the one conspicuous local expression of the disease. It is certainly more humane to counsel against such interference, rather than advise it, when experience has demonstrated the inexorable course of malignant diseases of this locality and the hopelessness of even the most radical surgery, and by this is meant not only complete excision of the growth, exenteration of the entire cavity, with the removal of the periorbita and the eyelids, but also resection of the bony walls supplemented by the use of the thermo-cautery.

I have at present under observation, a little patient with this most dreaded variety of malignant diseases.

Ten days before the case was brought to me for consultation, or about nine weeks ago, the parents first noticed prominence of the left eye. This increased rapidly. An exploratory operation was resorted to at once to determine the character of the tumor and unfortunately disclosed a sub-periosteal sarcoma, starting in the extreme apex and roof of the orbit.

As a preventative to future suffering, the prominent globe was removed and the orbit exenterated with no hope that the inexorable course would thereby be influenced. For two weeks the child was comfortable; then the growth returned with startling rapidity and assumed the dimensions shown by the accompanying sketches made by her physician, Dr. Jessup.

The purpose of this communication is to call your attention to a less frequent and less dreaded expression of malignant disease and to emphasize the necessity of prompt and thorough surgery in all cases of epithelial carcinoma of the orbit, even if extensive implication of the bony framework and the adjacent pneumatic sinuses may be present.

These destructive neoplasms of the orbit assume in many cases a rodent type and invade often also the adjacent regions of the face and head. From an insignificant beginning or a so-called "irritable wart of the lid-margin," or an "inflammatory pterygium," both in reality expressions of an epithelial new-growth, they advance steadily from small to extensive proportions, concealing for months and years their inherent destructive properties. Even after their true morphological nature is recognized or is unmistakably declared clinically, they may deceive us by apparently yielding to the surgical measures-excision, curretting, etc., ordinarily employed or the use of caustic pastes, electrolysis, galvano cautery, etc., only to reappear after a variable period of inactivity. When once the septum orbitale and deeper connective tissues of the orbit become infilterated,—the periorbita, the bony walls and adjacent pneumatic cavities give way to the destructive invasions of the disease and nothing checks its inexorable advance.

The following cases support the statement that radical surgery, may, in certain cases of malignant *epithelial carcinoma of the orbit*, be attended by favorable results which are never achieved in other forms of malignant disease of this cavity.

Case I—Epithelial Carcinoma, right orbit. Exenteration; resection of bony margin,—opening off rontal sinus etc. Recovery.

A. F , act. 58, was admitted to the Cincinnati Hospital with an extensive neoplism of the right orbit. The rodent growth had destroyed both upper and lower lids and the globe which had shrunken into a small mass, was covered with a lobulated, easily bleeding tissue. The entire bony margin was infiltrated and also the inner wall. Excision of the growth with exenteration of the entire contents of the orbit and denudation of the periorbita, followed by the removal of the infiltrated areas of bone and opening of

the frontal sinus, which was found invaded by the growth, was practiced with deliberation and thoroughness.

An interval of years has elapsed and no return of the growth has come about.

Case II—Epithelial Carcinoma of right upper and lower lids, globe and orbit. Complete excision of upper and lower lids; exenteration of orbit and denudation of periorbita. Recovery. No return.

J. J., act. 50. Fifteen years duration. Epithelioma of lower lid treated by excision, caustics, etc., with no relief. The entire inner wall of the orbit and inner side of globe were covered by an epithelial neoplasm which also infiltrated both upper and lower lids.

The entire palpebral area was circumscribed by an incision and the periorbita loosened and the entire contents of the orbit exenterated.

Five years have elapsed; the patient has been seen recently and no return has come about.

Case III—Epithelial Carcinoma of lower lid, globe, floor of orbit, maxiliary, frontal ethemoidal and sphenoidal sinuses. Operation: removal of lids; exenteration of orbit. Exploration of frontal, ethmoidal and sphenoidal sinuses, and partial resection of upper jaw. Death.

The patient, a woman act. 62, began the treatment of an epithelioma of the lower lid about 20 years before. Caustics and surgery were resorted to by cancer specialists and reputable surgeons. The interesting feature in this case was that the disease during the last three years withdrew its activity from the surface structures, and concentrated its destructive work on the adjacent sinuses. The last operation revealed hidden recesses of the disease, especially in the frontal maxillary and sphenoidal sinuses. The patient died seven days after the last operation.

These cases demonstrate, that epithelial cancer is of all the expressions of malignant disease, the most amenable to surgical treatment. Surgery, however, must be resorted

to with unerring thoroughness, and in a certain number of cases, accomplishes permanent arrest or disappearance of the disease. Surgical interference must be preferred to the use of caustic pastes or to the use of the thermo and galvano-cautery, for the reason that under general anæsthesia, it can be done with deliberation and completeness, without subsequent suffering.

The well-known tendency of epithelial carcinoma to attack the bony walls and to invade the adjacent sinuses, should prompt in every case, an exploration of these cavities.

Exenteration of the orbit is not sufficient. It must be supplemented by removal of the eye-lids, periorbita, resection of the bony margin, and if necessary, of the walls of the orbit, as well as exploration and exenteration of the adjacent sinuses.

THE ADMINISTRATION OF PURE OXYGEN IN CHLOROFORM ANÆSTHESIA

BY

C. B. PARKER, M. D.,

Professor of Clinical Surgery, Cleveland College of Physicians and Surgeons, Cleveland, Ohio.

We must admit that chloroform or ether administered to the point of surgical anæsthesia is attended with a certain amount of danger, no matter what precautions are taken either before or during their exhibition. Each of these general anæsthetics is attended with special dangers dependent upon the condition of the patient and their physiological action. Each, on the other hand, is especially adapted to certain cases. Too much time has been spent in discussing the question, which is the safer anæsthetic, ether or chloroform, rather than the question, more important to both patient and surgeon, which anæsthetic, in the given case is the safer and will the best prepare the patient for

operation and leave them in the best condition for a complete and speedy recovery.

It might be argued that morphine is the better sedative than opium and should alone be given to allay pain. Morphine like chloroform is pleasanter to take, is less bulky and can be administered in smaller doses, and acts more quickly than crude opium. These are similar to the comparative arguments made as between chloroform and ether. But we all use both morphine and opium, each in its appropriate case and for a definite purpose. In the same way and for the same reasons we should use both ether and chloroform, in producing surgical anæsthesia, choosing in each case that anæsthetic which for that particular case is the safest and at the same time will present the best conditions for performing a successful operation.

For general surgical anæsthesia I prefer and use ether.

Under certain conditions and circumstances I regard chloroform as the proper anæsthetic. These conditions may be conveniently divided into two groups. In the first group may be placed first, young children; second, quite old people; third, women in labor; fourth, patients suffering from chronic bronchitis and other chronic lung affections. In the second group first, patients suffering from heart disease, atheroma, aneurism; second, robust subjects, who are liable to struggle violently from the irritation and excitation of the ether and who might thereby rupture a blood vessel or strain the heart and dilate its walls; third, patients suffering from kidney diseases; fourth, in operations upon the face, nose and throat; fifth, in patients with marked idosyncrasy against ether; sixth, in patients who have taken ether and have a strong dread of its nauseating effects; seventh, chronic alcoholics.

As to the first group most surgeons are more or less agreed, and to the very young, to the aged, to women in labor and to those suffering from chronic lung affections chloroform is usually administered.

To patients in the second group I am aware that there would be naturally a wide difference of opinion as to the proper anæsthetic. They are all unfavorable cases for anæsthetics and any suggestion which can offer a diminution of the risks of the administration and any relief from the distressing and dangerous symptoms, during or after the operation, is worthy of careful attention.

After an experience of over a year in the administration of pure oxygen with chloroform, I feel confident that by this combination the dangers of the chloroform are greatly reduced.

As before remarked, I have tested this method of anæsthesia principally in cases unfavorable for any anæsthetic; e.g. chronic alcoholism, organic kidney disease, chronic bronchitis, emphysema, abscess of lung, ankylosis of the lower jaw, weak heart, and in a number of patients who had successfully taken an anæsthetic, usually ether, and who dreaded a repetition of the prolonged nausea. In two cases ether and chloroform had each been administered unsuccessfully, such alarming symptoms having developed on each occasion that the anæsthetic had to be discontinued. In each case the mixture of pure oxygen with chloroform was successfully given and the necessary operation completed without accident or interruption.

In a large number of the cases thus anæsthetized a careful record at brief intervals was taken. 1. The time required to produce complete anæsthesia. 2. Amount oxygen used. 3. Cases of absence of vomiting. 4. Duration of operation. 5. The pulse, its rate, character, and rythm. 6. The respiration. 7. Appearance of the patient.

The details of these observations have already been published and I will only detain you with a brief summary of the various points established by them.

1. Time required to produce complete anæsthesia. In the first experiments, wishing to be cautious, the time con-

sumed in bringing the patient to the point of complete surgical anœsthesia in one case was twenty-two minutes and in another seventeen minutes. At the present time we are able to completely anæsthetize the patient in from five (5) to nine (9) minutes.

2. The quantity of chloroform used varied in amount from 22 c. c. consumed in an operation lasting fifty minutes, to 7½ c. c. in an operation lasting fifteen minutes. The amount of chloroform necessary for surgical anæsthesia is thus greatly reduced. This reduction in the quantity of the anæsthetic is due, partly to the apparatus, and partly to the mixture of the pure oxygen with the chloroform. Experiments upon animals have proven that it is important to use as little of the anæsthetic agent as possible and this is especially true of chloroform, which is less soluble but probably more irritating in the body than ether. The dangers of the physiological action of the chloroform within the body are thus reduced to a minimum.

3. The amount and kind of oxygen used. Pure oxygen was used in all cases, being specially prepared, free from all impurities. It was furnished under pressure in iron tanks which had been exhausted of all air or other gases, before being filled with the oxygen. That there may be no doubt as to the purity of the gas it can be passed through a large wash bottle before being introduced into the inhaler. The quantity of oxygen gas necessary for one anæsthesia is about thirty gallons. Small portable cyclinders containing forty to fifty gallons are now supplied, a sufficient quantity for one or two anæsthesias.

In the short series of about 100 cases in which the chloroform with pure oxygen was given and records kept, nothing, of course, can be said from a statistical point of view of the comparative dangers of this combination and the methods of administering chloroform with atmospheric air. But from the notes taken in each case I gather the

following facts which establish the value of this method of anæsthesia in appropriate cases.

1. Total absence of vomiting after the operation in nearly 50 per cent. of the cases and in only a few is it noted that the patient vomited during the operation. In those cases in which vomiting did occur after operation, in no one of them was the vomiting more than occasional and in not a single instance was there persistent vomiting or retching, as is too often the case following both ether and chloroform anæsthesia. This freedom from persistent vomiting was specially marked and gratifying in those patients who had suffered most severely from vomiting during and after previous anæsthesis in whom not the slightest vomiting occurring during or after use of pure oxygen and chloroform. The complete absence of all vomiting in many cases and the total absence of anything like continued and persistent vomiting in any case observed, suggests the use of this combination in all plastic operations about the face and neck; abdominal and other operations, where vomiting would endanger the success of the operation.

2. The pulse. The frequency of the pulse, as indicated in the different cases reported, varied greatly before and during the operation and yet followed a certain rule. The number of beats gradually diminished to complete anæsthesia and then gradually increased as the operation was prolonged. What does not show in the figures was the character of the pulse. In no case did the pulse become very feeble or intermit, or was it necessary to interrupt the administration of the chloroform to restore the heart's action.

3. The respiration in each case was noted usually with words, "good and regular." In no case was it necessary to interrupt the anæsthesia for suspended or shallow breathing, or to resort to artificial respiration.

4. Appearance of patient. The face in most cases was flushed and of a healthy glow. In no case was that extreme

pallor noted which is so commonly present during anaesthesia when chloroform alone is given.

5. The duration of shock was greatly lessened. Consciousness is quickly regained. The period of delirium following the operation in which the patient is difficult of control, in which he may injure himself or defeat the purpose of the operation was wholly absent.

6. By a promise of this method of anaesthesia I was enabled to secure the consent of several patients to a second operation when otherwise the dread of the ordinary anæsthetic would have deterred them from seeking further surgical relief.

DISCUSSION.

HENRY O. MARCY, M. D., Boston, Mass.: I had no thought of being introduced to you so early, but I do take great pleasure in giving my confirmation to the paper you have just heard. I have during the past year used chloroform as suggested, selecting it for those cases in which we would have some misgiving if we gave an anæsthetic at all, and I can confirm what Dr. Parker says about the seeming safety. Particularly after laparotomy, it lessens shock and does away almost altogether, in my experience, with nausea and vomiting. This alone will commend its use in a large series of cases. Why it has not been used earlier now appears exceptional. I think for quite fifteen years I have used oxygen as a substitute for spray, knowing it was little heavier than atmospheric air and displaced the breath of the operator, which is so often a source of contamination. But it is only recently I have used it as your speaker has referred to, but my experience would lead me to commend it to your use and approval.

Closing remarks by the author:

I have nothing to add to the paper I have just read. I must thank Dr. Marcy for his enthusiastic endorsement of this method of administering pure oxygen with chloroform in surgical anæethesia. He has also emphasized the chief advantages of this combination. Permit me in a few words to call your attention to a

still more novel and recent method of producing surgical anæsthesia by the administration of nitrous oxide gas mixed with air and small quantities of chloroform.

This method of anæsthesia was recently demonstrated before me in an operation for resection of a rib by Dr. G. H. Hurd, a dentist of this city. By the use of forty gallons of nitrous oxide gas and ten drops of chloroform he maintained complete narcosis for fifty minutes. Anæsthesia by administering laughing gas is nothing new and we are all familiar with the startling pallor, stertorous breathing, setting of the jaws, excessive salivation and rigidity of the body, which is present during its exhibition. All operators who have hitherto used nitrous oxide gas for anæsthesia have insisted that the gas must be given pure and free from all admixture with air. This new principle insists that the nitrous oxide gas should only be given after it has been thoroughly diluted with air, or as I should suggest, pure oxygen gas; when mixed with air, all the disagreeable, disturbing symptoms of laughing gas anæsthesia disappears. There is no pallor, no stertorous breathing, no fixation of the jaw and no drooling. In the few cases I have so far seen the patient breathed easily all the time and the face was even slightly flushed.

The apparatus for the administration of the gas and its admixture with air is most ingenuous. It consists, as you see, of a bag into which the gas flows from a tank. It is well as a matter of precaution to have two 40 gallon tanks of the gas in case one should give out, and the doctor has an ingenious device here by which you can draw from one or both tanks at same time without shifting the connections.

The gas passes from the bag or receiver along this bent tube into the mouth piece of the inhaler; at the angle is a valve by which one can increase or diminish the amount of gas administered. At the point where the tube enters the mouth piece there is a fenestrated collar through which a stream of air flows into the mouth piece mixing with the gas; by turning this collar you can increase or diminish the amount of air. The mouth piece is also fitted with a second rubber bag with very distensible walls; it opens from the under side of the mouth piece and takes the strain off the lungs in rapid and forced respiration; it also serves an economic purpose, permitting gas in the mouth piece at

moment of exhalation to be held in this bag and taken up at next inhalation.

The chloroform is admitted drop by drop into the nitrous oxide gas as it passes through the tube and can be so adjusted that none is given.

In this method we are using the safest general anæsthetic known, as has been attested by the thousands of anæsthesias in the hands of dentists with very few deaths. The quantity of chloroform used is very decidedly less than by any other method of administering chloroform. I believe that when this apparatus has been placed on the market and used it will prove a decided advance in our means of producing surgical anæsthesia surely and safely.

X-RAY INJURIES

BY

N. STONE SCOTT, A. M., M. D., CLEVELAND, OHIO.

Consulting Surgeon to the City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out Patient Department, Cleveland General Hospital, etc.

The question of X-ray injuries is of so much importance that it has excited great interest, and has received extensive notice in the medical, electrical, and lay press. As regards the medical press this is especially true of a case reported by a physician, who, without X-ray experience, has relied on his medical knowledge alone, and has advanced an erroneous theory of the first importance.

It has been evident for a year past that the X-rays are sufficiently powerful to produce under some conditions most disastrous results, but very diverse views have been held as to the cause, the frequency, the kind of apparatus most likely to produce them, and the best way to avoid them.

In order to assist in arriving at a proper solution of these questions, I have sent a circular to most of the leading medical and electrical men who are doing X-ray work, asking for particulars of X-ray injuries. The questions

asked include the kind of apparatus, length of spark, number of exposures, distance of platinum from the part exposed, and inquiries relating to the characteristics of the injury itself. The results of these investigations are shown on the accompanying chart. Some fifty personal replies have been received, one quarter of these report forty-five hundred cases, and, since a large number of the leading men in X-ray work are to be found among the writers of three quarters giving no estimate of the number of cases examined, it is certainly not an over-estimate to say that this report includes at least twenty thousand examinations, exclusive of those made by X-ray exhibitors. This list contains thirty-one cases of injury or one in about thirteen hundred.

Dr. Gilchrist, of the Johns Hopkins Hospital, has collated from the literature twenty-four cases of injury. I have, mainly by personal letters, increased this to sixty-nine. This includes the case of J. Lynn Thomas of cystitis, which the author thinks was not due to X-rays; one reported by Dr. Wallace, in which she attributes an aggravation of renal colic to the action of X-rays; and one reported by Prof. Blake, in which there was the formation of abscees evidently due, as the Professor thinks, to an increase of the original difficulty. It includes a similar case of my own of a felon, which I think an incident rather than a result of the X-ray examination. The chart also shows twenty-three cases listed as X-ray exhibitors, as well as several cases in which the injury was doubtless an increase of the trouble for which the case was examined, rather than an X-ray injury.

Many of the reported injuries occurred in the early days of the discovery, when the apparatus was crude or the operator inexperienced. It is not difficult in most of the severe cases to see how it might have been avoided.

The symptons of all cases, except the few where deeper structures were supposed to have been affected, present the

picture of a dermatitis, the distinctive feature of which is its slow onset and tendency to assume a chronic form. Those who work extensively with X-rays are frequently compelled to give up their work. The first symptoms appear as a rule in from three to seven days. Fuchs, however, reports a case of one exposure of an hour in which the hand had a frozen appearance during the exposure, with pain, redness, and swelling, which commenced at once, continuing to vesication. Prof. Daniels, Marcuse, Kolle, J. Mont Bleyer, and others mention cases which were several weeks in developing symptoms that were noticeable.

The skin directly over that strongest scource of X-Rays, the platinum terminal, first commences to swell becoming red and painful; this gradually extends to parts farther from the scource of X-rays, even to those parts not directly exposed. The pain is of a deep seated, dull, aching character (although some cases run their course without pain). Vesicles then appear, filled at first with a serous exudate and purulent material; in severe cases a sphacelus forms which is gradually thrown off, leaving a raw granulating surface slow to develope and slow to heal.

The kind of apparatus seems to make no difference: the Ruhmkorff coil, the Tesla coil, and the static machine have all given severe cases. The majority have been given by the Ruhmkorff coil; but this is due simply to the fact that this was the first in use, and is yet by far the most frequently used.

Distance of the platinum terminal is of importance, because, when the platinum is near, the X-ray is concentrated upon a small surface; but, if the ray is strong enough to produce desired effects, it will be strong enough to produce the undesired if continued too long. Kolle and Richardson both report cases where the platinum was eighteen inches away; Richardson's case being submitted to three examinations (on successive days) of twenty, thirty, and thirty-five minutes; a total of only eighty-five minutes.

The length of time is also important. On the chart five cases are reported from exposures of less than one hour. In cases number 1 and number 57 the distance of the terminal is not given, the time is forty-five minutes. Number 21, which is exactly one hour exposure with quite severe symptoms, had the terminal at only five inches. Number 41, though extremely short in time, only five minutes each on three successive days, was only one inch from the terminal. If the experiment had been made at a distance of eight inches this would have been equivalent to some five hours exposure; not so very short a time after all. It seems probable that the most susceptible would not be affected by an exposure lasting an hour if the terminal is at least ten inches away; this, under all ordinary circumstances, is amply sufficient for a medical examination.

Consideration of the causes of X-ray injuries would take us too far beyond the scope of this paper, and belongs legitimately to the electricians, who are at wide variance with one another. I shall only mention in passing the various theories. Elihu Thompson advanced the theory that the burns were caused by ultra violet light; he has since proved to his own satisfaction, although not to the satisfaction of some others, the falsity of this hypothesis. Tesla considers the injury due to ozone generated at the point of contact of the X-ray. Another believes it to be nitrous acid. Several experimenters think it is produced by particles bombarded off the terminal; one observer belives the particles floating in the air are bombarded into the skin by the X-ray. A number of operators have advanced the theory that the burns are caused by static or other electrical discharge. It seems certain that if it be not due to the X-rays directly, it must be something which goes where they go, and anything which would protect would stop the ray; since cases of injuries have occurred through clothing of various kinds, and through many protective substances, such as vaseline, zinc ointment, thin aluminum, etc.

That the X-rays do affect the skin seems certain; but that deeper structures are affected primarily is at least doubtful. Among the reported cases there are but six which can possibly be so classed.

Dr. A. G. Wallace, in the Kansas Medical Journal, February, 1897, reports a case of renal colic, which prior to the X-ray examination had been having attacks about once a month; after the X-rays were used these occurred every day, and a large quantity of sand was passed. This "disintigration of the calculus" the doctor attributes to the X-ray. There have been many cases of renal calculi examined by X-rays, and, since this case is the only one in which such a result has been noticed, it seems much more probable that this increase was a coincidence rather than a result.

Dr. J. Lynn Thomas, in the British Medical Journal, March, 1897, reports a case of stone in the bladder which, the day following an exposure to the X-rays lasting sixty-five minutes, developed a crystitis. Dr. Thomas does not think that the X-ray caused the cystitis; a conclusion which seems eminently proper in view of the fact that a bladder with a stone in it is sure sooner or later to develope cystitis; yet it may be possible that the irritation of the stone, while not enough to produce symptoms of its own, may have been enough so that the slight added irritation of the X-ray brought on the cystitis. The case is certainly of great interest, and worthy of record.

The Electrical Journal, December, 1, 1896, contains an account of a case in which Prof. Blake examined the ankle by the X-rays; six weeks later an abscess opened in the region of the ankle joint. Prof. Blake in a personal communication to me says that he thinks the abscess due to the original trouble for which the examination was made.

This leaves three cases in which there is a reasonable doubt as to the existance of a periositis. One was reported to me by my friend, Dr. B. Of this case the doctor says: "The periostitis which resulted from the X-ray examination

delayed an operation, which was necessary for an old dislocation of the ulna; and the exudate which was thrown out tended to interfere with a better result." That this bad effect was due to the X-ray is at least doubtful. Hundreds of examinations have been made for fractures and dislocations, without producing such results; on the other hand medical history is replete with cases of comparatively trivial fractures and dislocations which later developed periostitis. Thus it certainly is not proven that the X-ray was an etiological factor in the production of the periostitis.

My own case was that of a quadroon, twenty-eight years old, who had her hand severely crushed and burned five years before in the hot mangle of a laundry. As a result of this there was extensive sloughing of the soft parts, and consequent cicatricial contraction when the hand finally healed. December 18, 1896, the hand was viewed several times in the fluoroscope, and two skiagraphs were taken. The apparatus consisted of a Tesla coil and double focus tube, made by the Warren tube works after my own drawings. The hand was placed eight inches from the platinum terminal, the exposures lasting one and a half minutes each. January 14, 1897, almost a month after the examination, she presented herself with an inflammation of the distal phalanx of the middle finger. The pain, she said, started at the time the examination was made, and had been very severe until some days since, when an abscess broke between this finger and the next, to which it was closely bound; from this time on the pain was comparatively slight, lasting for a number of weeks until finally a small sequestrum was discharged, after which it healed rapidly. At no time did I see any inflammation of the skin. There was undoubtedly in this case an ostitis and accompanying periostitis, that this developed soon after an X-ray exposure is equally true, and it is impossible to prove that the inflammation was not due to the X-ray. It has to be borne in mind, however, that these cases of scar tissue and conse-

quent lowered vitality are especially prone to inflammatory reaction; and some other accident, possibly slight, which she either unconsciously or wilfully overlooked, might easily have been the determining cause.

The case of Dr. Gilchrist I have reserved to the last, because of its importance, of the wide publicity given it, and because of the harm done by erroneous deduction which the doctor has drawn. In the beginning of the X-ray work, many physicists, because they were in a position to manipulate a Crookes tube, undertook to pass judgment upon medical subjects. Much wild semi-medical talk and writing was indulged in, and not a little harm done; so that the profession was not slow to see that medical men must equip themselves to retain control of medical subjects. As an illustration I would site a little book entitled "Something about X-rays for Everybody," by Edward Trevert, electrician. On page 61 he says: "Figure 38 shows the bones of a young woman's arm, consisting of the humorus (upper bone), the hinge joint of the elbow; and the ulna and radius (the lower bones). A fracture of the radius near the elbow is distinctly shown." This fracture which is so distinctly shown is nothing else than the bicipital tuberosity. Such mistakes were very natural, and arose from a lack of medical experience and knowledge; but medical knowledge is not the only requisite, and Dr. Gilchrist, who is not an X-ray operator, has made a very natural mistake on the other side, and given a wrong interpretation to his skiagraphs when he infers that there is an osteoplastic periostitis present. The case was briefly that of an X-ray exhibitor, who, after exposing his hand four hours daily for three weeks, had a dermatitis develope over the hand, wrist, and forearm. The points on which the doctor relies for a diagnosis of "osteoplastic periostitis" and probably an "ostitis" are:

First—Pain which was of an aching, throbbing character, so that he frequently could not sleep at night.

Second—The phalanges were noticed to be distinctly thickened.

Third—Voluntary movements of both fingers and hand were abolished; he complained of the joints being very stiff.

Fourth—Photographs show all the phalanges of the right hand much thicker than those of the left, normal hand. The increase in size is particularly marked in the first phalanges of the index and second fingers. It cannot be said from the photographs alone that any of the carpal bones were increased in size.

Fifth—The spaces between the bones at the joints were much less marked and narrower than those of the normal hand.

Sixth—The outline of the affected bone was more irregular and rougher.

Seventh—The bones were denser in appearance.

Let us review his reasons and if possible answer them.

First—Pain of a dull, aching, throbbing character might suggest bone pain, but it is also characteristic of most X-ray burns, even those on the thigh and abdomen, where it cannot be due to injury of underlying bones.

Second—The sensation of the phalanges being thickened might be due to a thickening of the bone; but, if the skin is thickened and infiltrated, it would be very easy to imagine that the bones were thickened. A comparison between the diseased and normal finger by the sense of touch would be most deceptive.

Third—The feeling of stiff joints and loss of voluntary movements would certainly be the result in a severe dermatitis with infiltration of the deeper portion of the skin; and furthermore, if the bones involving the finger joints had been involved and the carpal bones not—as judging from the skiagraphs is the case—the fingers ought to be stiff, the wrist moveable. The history distinctly says, however, that the wrist was stiff.

Fourth—When one views the hand through a fluoroscope and has the strength of the X-ray gradually increased, the first thing seen will be an outline of the hand, then gradually the bones become clearer, and after a little the thinner parts of the flesh gradually fade out as it were, and lastly even the bones seem to dissolve, commencing at the thinner and smaller ones. So, too, if one takes a skiagraph of the hand, and gives sufficient time to properly bring out the wrist and thicker parts, the thin parts will be overtimed, It was while conducting a series of experiments, some time since, to overcome the unequal exposure, that I got some pictures of normal hands which offer an explanation and refutation of the fourth, fifth, sixth and seventh points made by Dr. Gilchrist. These pictures were made by shading the thinner parts, during part of the exposure, with lead plates. Apparently the infiltration of the skin, and its consequent thickening has brought about the same result that the lead plate produced with a normal hand.

Fifth—In the underexposed hand the joints are much less marked and narrower than in the one overexposed.

Sixth—The underexposure is also the cause of the affected bones being more irregular and rougher, because in the overexposed bone the lesser projections and irregularities are first to disappear, thus diminishing the apparent size and smoothing off the outline.

Seventh—The same reason accounts for the apparent density of the bones.

Eighth—Aside from these points, an examination of the outlines of the soft parts shows that those of the affected hand are plainer than those in the other, adding to the proof that the affected hand is relatively underexposed. And, last but not least, I must criticize any deductions drawn from a comparison between one picture of each hand on the assumption that they are taken under similar circumstances. One cannot be sure that a tube is working just the same during two exposures, and since we have no

standard of measure for X-rays it is impossible to say that the relative exposure is the same; this case of Dr. Gilchrist's should have had a series of pictures taken of each hand.

In conclusion I would recapitulate:

First—Injuries are very rare when proper precautions are taken.

Second—Injuries are limited to the skin and contiguous structures, at least it is not proven that deeper parts are injuiously affected.

Third—It is probable that the bones or deeper structures are not affected.

Fourth—The proper precautions consist in confining X-ray examinations to short exposures, not to exceed one hour for a distance of ten inches from the terminal, and not to be repeated until sufficient time has elapsed to show that no bad effects seem likely to develop.

Fifth—If repeated short exposures are made, the slightest bad symptoms should be an indication to cease all further exposures.

DISCUSSION.

DR. C. F. CLARK, Columbus—I have very little to say on this subject. I was delayed in getting a report to Dr. Scott, that I thought might be of some interest to him. It was the case of a railroad man who had received an injury from a piece of metal, in the eye. We wished to determine whether it was located in the eye-ball or whether it had passed through. He was examined by Dr. Early, and I report the case with Dr. Early's consent. No injury was experienced at the time and no difficulty was experienced with the use of the X-rays. But two or three weeks afterwards the man lost the hair from the portion of the head exposed, without any apparent deremátitis. His wife called his attention to the fact his barber had cut his hair too short, and on examination he was found to have no hair on the side of the head from the mastoid process upward and forward. The hair returned afterward but broke off easily, and now is turning gray and is very weak and brittle.

CHAPTER V.

A LIMITED EXPERIENCE WITH CALOMEL IN THE TREATMENT OF CATARRHAL PNEUMONIA OF CHILDREN.

BY

C. W. GOSS, M. D., LANCASTER, O.

In the early part of my professional career, my first two cases of serious illness happened to be catarrhal pneumonia, both in the same family, and both secondary to whooping cough. The children were aged respectively four and five years, and when I saw them the first time the characteristic râles were heard distinctly over the chest, with slightly labored breathing, and a mild degree of cyanosis.

Fair sized doses of triturate of calomel (gr. 1 of calomel to ten gr. sugar of milk) were administered every two hours until the bowels were freely moved, which caused some degree of amelioration in their condition. I then put them on liberal doses of the carbonate and iodide of ammonia, and watched them through the next three days with a considerable amount of uneasiness. Forty-eight hours from the time they were put on the ammonia preparation, they were fighting for air and the cyanosis was much more pronounced.

Turpeth mineral was resorted to from time to time, and after each emesis there was temporray relief, only to be followed by worse dyspnoea later on. Such was the history of these two children, until at the end of three days they died an hour apart from carbonic acid poisoning. A year later I met with cases three and four in separate families,

their ages being two and three years respectively. My first visit found both little ones fairly well advanced, and in a fair way to develop that terrible dyspnoea, which I had observed in the two previous cases. They were at once put on the triturate of calomel until there was free catharsis; with a moderation in their symptoms. It was at this time that I decided to keep them under the influence of calomel; administering it often enough and in sufficient quantities to produce four or five watery stools a day. Much to my surprise the cyanosis did not increase and at no time was there any special effort on the part of either child to get its breath.

Both were convalescing nicely at the end of five days. Here were two different plans of treatment, with decidedly different results, and the odds in favor of the calomel. Now comes case number five, a stout robust boy six years of age, and who was complaining of a cold a week before I saw him. I found him with a tempature of 103½, bowels constipated, tongue coated, and sub-crepitent ráles all over the chest; cyanosis and labored breathing were both present.

I at once ordered good sized doses of the triturate of calomel every two hours, and at the end of eight hours, the bowels were well moved. From this time on the patient convalesced nicely, and at the end of six days, during which time he was constantly under the influence of calomel, he was up and around. Cases six, seven and eight, were well marked cases of catharrhal pneumonia, and made an uneventful recovery, with the exception of the youngest, a girl one year old, whom I was compelled to vomit once, because of unusually severe dyspnoea. We will close the report of these cases, by speaking of the last four collectively, which are strung out through a peroid of two years. They were all quite sever, but uniformly succumbed to the calomel. Of course it must be understood that along with the calomel treatment, careful feeding and judicious stimulation was resorted to.

We now have a record before us of two cases of catarrhal pneumonia, treated by the ammonia preparations with two deaths, and ten cases treated by calomel with no deaths. It might not be inappropriate to speak of the antiphlogistic and cholagogue properties of calomel as they are well known to the profession, and it is through these properties that the above results in my judgment have been obtained. Is it not true, that when inflammation is relieved or modified, secretion is lessened and equally true, that when the secretions of the body are in a normal condition, absorption is much more liable to take place. I am aware that my experience with this plan of treatment is quite limited and will require more extended observation to establish its worth, but I simply offer the few cases coming within my experience with the hope that gentlemen of larger opportunities and riper experience may be induced to give it a trial and report results. For the present I shall content myself to pursue this line of treatment until something better offers.

FOUR CASES OF HYDROPHOBIA.

BY

J. C. LAWRENCE, M. D., COLUMBUS, OHIO.

CASE I.

It is not intended in this paper to discuss the subject of hydrophobia, but simply to report four cases that have occurred in Columbus.

The first case was in charge of Dr. R. Wirth, with Dr. D. N. Kinsman as consultant.

Mrs. Dicker, aged 40, was first seen by Dr. Wirth, October 5, 1895, when she suffered from attacks of difficult breathing and spasms of the Laryngeal muscles and difficulty in swallowing. The facial expression was anxious and the patient nervous. There was no visible cause for the

symptoms—and as they gradually grew worse — hydrophobia was the only tenible hypothesis. Diligent inquiry of the husband and friends failed to elicit any history of dog bite until the evening of the second day when the husband called at Dr. Wirth's office and told him that a neighbor had just recalled the following circumstances. About six weeks previous a little black and tan dog belonging to the neighbor was in Mrs. Dicker's yard, who was requested to hand it over the fence to its owner, and she was in the act of doing this when the dog bit her in the thumb, inflicting a punctured wound. The next day the dog disappeared and was never seen afterward. The dog was not known to be rabid—his disappearance from home being the most suspicious symptom. The bite was not treated, but promptly healed and was soon forgotten.

At the time of her illness there was nothing to attract attention to the wound and though the scar was noted, nothing was said to the patient about it. The spasms became more frequent and painful—any afferent stimulus producing them, the dyspnoea greater and more distressing and dysphagia absolute.

The mind remained clear until near the end when complete paralysis developed, and she died on the evening of October 7th.

No remedies seemed to have any influence over the disease or symptoms. The treatment consisted in the use of antispasmodics. An interesting feature of the case is the fact, that the patient did not know the dog bite had anything to do with her illness, or that she was supposed to have hydrophobia. There never was any fear of the disease expressed or manifested by her.

I am indebted to Dr. Wirth for the history of this case.

CASE II.

On the evening of December 4, 1895, George Osborn of the Capital City Transfer Line, brought an employe, Horace

T. Reed, a single white man, aged 37, to my residence. Reed complained of "shortness of breath," sore throat, headache and pain in right side of face, also that it was difficult to swallow even water. There was much mental depression and an anxious expression of countenance.

The pulse was 108 and breathing rapid. On inspection nothing abnormal was found in the throat. Examination of the lungs also gave negative results. It was noticed, however, during the examination that occasional spams of the larynx would occur during which he would suffer from dyspnœa.

Finding nothing to account for the symptoms a suspicion of the hydrophobia was entertained, but nothing was said to the patient concerning it, as he had made no mention of the dog bite. After he had returned home, I went to the Osborn residence to see George Osborn and to learn if Reed had been bitten by a dog. Instead of meeting Osborn, I came in contact with Reed, who then told me that he had been bitten on the left cheek by one of the dogs that staid at the barn, on October 27, 1895. He said there was nothing wrong with the dog, the wound was untreated. The dog, I afterward learned, showed all symptoms of rabies and died in a state of paralysis two or three days after the biting. Another dog bitten by this one showed signs of illness and was killed. Both were of the Scotch Terrier type. I told him the bite probably had nothing to do with his condition and this seemed to satisfy him. I gave him a quarter of a grain of morphine. He expressed no fear of hydrophobia. He slept about two hours in all during the night, but was restless, and every little while got up and lay down again.

When seen at 8 o'clock Thursday morning, the symptoms were worse. Any attempt to swallow brought on a severe painful spasm of the larynx as did also any little exciting cause, such as any one coming into the room, a loud noise, etc. These spasms were more frequent and the pain and

dyspnœa greater, and when they came on, he would rush to the window, which had to be kept open, climbing over any object in his way, clutch at his throat, cough and utter gutteral sounds in his efforts to breath. His countenance would have an expression of anxiety, pain, agony, terror and wildness that was simply horrible in the extreme.

Morphine had very little influence over either the pain or the spasms. There was some anæsthesia of the skin of the arm as he did not feel the hypodermic injection. His mind remained clear and he talked rationally and quietly except during the spasms. There was complete dysphagia, the sight of water or the thought of swallowing produced the spasms. He grew rapidly worse and became delirious Thursday night—at midnight the attendants had to resort to forcible restraint. At this time he continually ejected a viscid saliva. So great were his sufferings that chloroform was used from about 1 A. M. to 5 A. M., a large amount being required to obtain any control whatever. At this time the paralytic stage began, which lasted until 12:30 P. M. Friday, when he died quietly.

From the beginning of the attack he was in charge of two attendants, George Osborn and Frank Wright, a medical student. Dr. F. F. Lawrence assisted in the treatment. Dr. Dixon L. Moore also saw this case several times.

CASE III.

On the evening of March 11th, 1896, Mrs. Charles Vogel, age 50, on leaving the home of a neighbor extended her left hand over the gate to open the latch, when it was seized by a large, woolly black dog inflicting a punctured wound between the middle and index fingers. (The dog disappeared at once and was not seen again.)

The hand was found to be covered with viscid saliva. No treatment was given the wound and it healed uneventfully. On Monday evening, May 25th, pain began in the left hand, arm and shoulder, which was thought to be

rheumatic. On Tuesday the pain was increased and in the evening Dr. Frank Lomerson was called. He found her very nervous and depressed and suffering from the pain above mentioned. She also had difficulty in swallowing and in breathing.

Wednesday morning the symptoms were more severe and hydrophobia was suspected.

About ten o'clock I first saw her with Dr. Lomerson. She was then hysterical but complained much of inability to swallow.

The effort causing the most excruciating pain in the throat. Every little while she suffered a spasm of the larynx accompanied with great dyspnœa and pain. The sight or mention of water brought on a spasm of the larynx with a hard struggle for breath and she was afraid of the sight or sound of water. She had some pain in the left arm and thought she had hydrophobia. There was an anxious expression of countenance and at the time of the spasms the mouth was drawn open and the face showed fear, terror, wildness and horror.

The nervous symptoms were so marked that I was inclined to regard the case as one of hystero-hydrophobia, but subsequent events demonstrated the reality of the attack. A quarter grain of morphine was given subcutaneously and suggestion tried. She was positively told that she did not have hydrophobia, and that she would be able to swallow a glass of milk at four o'clock. At this hour she made the attempt and partially succeeded but with the most severe and painful laryngeal spasm and dyspnoea almost to suffocation. So severe was this spasm and so frightful her appearance that further efforts to encourage her to swallow were abandoned. By Thursday all the symptoms were more severe, the spasms more frequent and dyspnœa, greater—any afferent stimulus producing the spasms during which she would be flighty. About two P. M. she became wildly delirious and constantly expectorated

a viscid saliva and sometimes vomited. To control her and keep her covered a sheet was stretched over her and secured to the bedstead. At two-twenty Friday morning she died, the stage of paralysis coming on about two hours previously.

Neither morphine nor hyoscyamine had any influence over the symptoms.

Dr. F. F. Lawrence saw the case two times and Dr. Andre of Waverly once.

CASE IV.

The following report was kindly furnished me by Dr. Howard Black, Resident Physician of St Francis Hospital:—

Patient's name, Andrew Klietz, aged 27 years, married, native of Germany. Resident of Congo, Ohio. Miner by occupation. Admitted to hospital Oct. 2, 1896, where the following history was elicited: About four months ago patient was bitten by pointer dog at base of left thumb nail The dog was sick and patient attempted to force mouth open with a stick so as to give him some medicine. Could give no cause for dog's illness, but says a rabid dog had bitten several animals in the vicinity a short time previously. Did not think his dog had been bitten. The patient's dog lingered a few days and then died in great agony. It was not thought at the time that he might have had rabies: patient calling the illness an attack of "worms." Thought no more about the matter, the bite healing rapidly and leaving only a small scar. October 1st patient and wife came to Columbus to attend a friend's wedding. For several days previously patient had been feeling rather indisposed but did not pay any attention to it. While at the wedding, which took place in the evening, he attempted to drink some water, but was unable to do so, owing to a spasm of the larynx. Succeeding attempts only provoked more severe spasms.

The friends becoming frightened ordered him sent to the hospital. On the way in the ambulance he had several clonic convulsions, badly frightening the officers. I saw him at the hospital about 18 hours after the first symptoms were manifested.

Found him a very muscular, well-developed man, but with an expression of great agony on his countenance.

Upon offering him a drink, he immediately had a severe laryngeal spasm: respiration seemed to be arrested and the utmost terror and distress were depicted on his countenance. Found that even a suggestion of a drink would produce one of the spasms, also a current of air, such as an open window or the waving of a fan, the patient complained that it took away his breath. I finally got him to swallow a little milk, but only with the greatest difficulty.

Up until this time patient did not think of the possibility of his having hydrophobia but now remembered the dog bite of several months ago and feared that he was going mad. Administration of morphia, one-half grain, hypodermatically had no effect. Frequent repetition served only to temporarily quiet him. Later the spasms became so severe and painful to witness that inhalations of ether had to be resorted to.

Toward the end the laryngeal spasms were repeated twenty or thirty times in the hour. The general convulsions became so frequent and violent that it was found necessary to resort to shackles and it was feared, so great was patient's strength, that this restraint would be insufficient.

Before patient became delirious and while spasms were yet comparatively infrequent, he realized when one of the attacks was coming on and would request attendants to keep away from him so that he might not injure them.

Also when we took him to the isolation ward he bade the patients good-bye, saying that he knew that he was mad and that he must soon die. He weakened rapidly and die

about 18 hours after admittance to the hospital apparently from asthenia.

No autopsy was held.

THE CAUSATION OF EPILEPSY.

BY

A. M. BLEILE, Columbus.

I should define epilepsy as that condition marked by loss of consciousness, convulsions at first tonic, then clonic, and such attacks recurring in the same individual with greater or lesser frequency.

I wish here to treat more especially of the so-called idiopathic form rather than of the reflex and tranamatic.

Pathological Anatomy. It is fairly well conceded now, that, at least by the means at our command, no lesions are found post mortem which could be held causative of the attacks or explanatory of the condition. It is true that Bevon Lewis thinks that there are alterations in the nerve cells of cortex, but this observation needs substantiation. Other observers have set up as the pathological causative condition a sclerosis of the neuroglia and of the arterioles in general. I can say from my own observation that such condition is not invariably found in epileptics, and in fact we never found it in cases of more recent origin, so that it would seem that this sclerosis is the result of the intense vascular changes occurring during the attack, rather than their cause.

Pathogenesis of Attack. The attack, we hold, is due to an anemia of the cerebral cortex, brought on by an arterial constriction, due to either hyperirritability of vasomotor centres or of the cortical motor centres or (and this is true in a majority of the cases) of both. Such hyperirritability may be congenial, or acquired, and the immediate cause acting on these centres is a poison or ptomain, generated

probably in the intestinal canal, *certainly* within the body of the patient himself; that is, we have to do with a case of autoinfecsion. In support of the view of cerebral anemia as the cause of the attack may be cited experiments on animals. It is true that vascular constriction of the brain, as brought on in rabbits, cats and dogs by stimulation of the cervical-sympathetic, generally fails to bring on an epileptic seizure, but if such animals are weakened by a copious blood-letting or other means, convulsions are always produced in this wise.

A similar result follows 'sudden interruption of the blood flow, as by compression of the corotid arteries.

In the British Medical Journal is quoted an interesting case illustrative of this view of cerebral anemia as causative of attacks. In a male adult who was subject to frequent and severe attacks of epistaxis, venesection was resorted to during such a hemmorrhage, when suddenly there came an epileptic attack, followed by deep coma. Next day the epileptic seizure was repeated and the patient remained an epileptic all his life.

I find two other cases recorded where venesection practiced in the course of cerebral disease—cancer in one case and tumor in the other—caused attacks of epilepsy.

In man we know the attacks are always ushered in by pallor; that is, anemia of the face, and, as has been observed in a few cases, constriction of the retinal vessels, and therefore, by inference, of the cerebral arterioles. Further, it is known that amylitrite, which can only act by dilating the blood vessels, by relieving anemia, will often abort an oncoming attack of epilepsy. Then, it has been observed that bleeding of wounds will be suddenly arrested at the onset of an epileptic seizure. Nor is it easy to explain the loss of consciousness except by the theory of cerebral anæmia.

That the trouble is cortical is attested, among many other arguments, by the fact, first, that by faradisation of

the cortical motor centres we can produce epileptic attacks in animals, and second, that epilepsy cannot be produced in animals in which such cortical centres have been removed.

Bartholow, in a man, produced an epileptic attack by faradisation of the posterior central convolutions.

It may be noted here that one attack predisposes to another. Animals in whom an attack has been experimentally induced, yield more readily in succeeding experiments; that is, they respond to weaker stimuli. And I recall here one case in man, caused by epistaxis, already cited. That there is a predisposition, which may be congenital or which may be acquired, permanently or temporarily, through depressing agencies of various kinds, seems so, because cortical stimulations by themselves and in the vast majority of cases are rarely strong enough to produce epileptic convulsions. If there were no predisposition, the causes which are acting in many persons would give us a far greater number of epileptics than we actually have. That such predisposition may be acquired is evident from the animal experiments already cited, and by a few observations made on the human subject.

In support of the proposition that the immediate cause of the attacks lies in the absorbtion of a ptomaine, probably formed in the intestinal canal, the following may be said: It is noted, in the first place, that in the greater majority of cases the attacks are preceded by gastric and intestinal disturbances. In fact, this clinical observation, which was given to me by Dr. Rutter, forms the basis of a series of observations undertaken by myself. We showed that the urine passed by patients after an attack, is markedly increased in its toxicity as tested by intravenous injection in animals, and that animals so treated show convulsions the precise counterpart of an epileptic seizure in man. We could further extract from such urine substances, though not in a pure state, which, when dissolved in water and in-

jected subcutaneously, give the same results. From normal urine no such substance could be obtained. This proves conclusively, that either a ptomaine or tox-albumen, is thrown off by the kidneys in persons suffering from idiopathic epilepsy.

On theoretical grounds, which I do not care to discuss here further, it seems probable that the digestive disturbances so often noted give rise to an excessive formation of ptomaines in the intestinal tract. We have had no opportunity to experiment with the contents of the small intestine, experimental difficulties being too great here, but from the feces, substances can be extracted which are identical in their effect on animals with those extracted from the urine. It is only fair to say, however, that the same substance can be obtained from normal feces: whether in smaller amounts or not, I am not prepared to say.

Where my own observations have been alluded to, I refer to work carried on in the State Hospital for Epileptics at Gallipolis while I was connected with that institution last summer and the summer preceding.

DISCUSSION.

DR. R. HARVEY REED, Columbus: Did I understand the essayist to say that he made examinations of the urine in traumatic epilepsy and was unable to obtain these extracts?

Answer: I said in my paper I would confine myself to idiopathic epilepsy.

DR. REED: Then the question arises whether these extracts, to which the Doctor refers, do exist in traumatic epilepsy. If they do they would throw some light on a subject still in the dark, except that it has been discoved, apparently, by these experiments that a certain extract has been isolated which produces convulsions in the lower animals when injected. It seems to me to make these experiments conclusive and to throw more light on the subject, that the same experiments should be conducted in cases of traumatic just as in idiopathic epilepsy, and see what the comparison would show.

F. W. LANGDON, M. D., Cincinnati. If I got the drift of the remarks made by the speaker, it is that the chief dynamic feature, at least, in epilepsy is due to an undue irritability of the cortex by reason of which the epileptic discharge occurs in response to the added irritation of certain toxines. This, of course, is one of the accepted views we meet with in all the books. Now, without entering into the discussion as to the causes of that explosion, whether they be traumatic, chemical, physiological or pathological, it seems to me improbable that this nervous tissue, which is undoubtedly defective in its construction, can logically, from a physiological point of view, be considered capable of doing so much more work as is manifested in the convulsions of epilepsy. While this is a theoretical point, it does seem to me that we must turn our attention more to the fundamental principles of movement of any kind in order to understand how *convulsive* movements may be produced. I think we may consider it an accepted physiological fact that all motion is a response to some preceding sensation received, whether an irritation in the intestinal tract, a toxine in the blood or something else. Now, if we presume that such a preceding sensory irritant exists, all we need to account for an unregulated movement is a defect of certain controlling centers which normally keep the movement regulated within proper bounds. A simple defect in any of the mechanisms which have the function of inhibiting motion normally, is all that is necessary to account for any convulsion, whether epileptic, hysteric, uraemic or otherwise. Now, if we go back and take a biologic view of this problem, we all know from our studies of animals in the ascending scale, that inhibition is the highest faculty in the human cortex; and what is more natural than to suppose that in any developmental defect this inhibitory mechanism will be the first to suffer. Therefore, I do not consider it necessary to presuppose a hyper-irritability on the part of the moter nerve centers. I would think it just as reasonable to consider the epileptic convulsion, in common with other convulsions, an *inhibitory insufficiency* as to consider it a motor hyper-irritability.*

*The speaker has elaborated this view at greater length in his paper on "Epilepsy and Other Convulsive Diseases."—Journal Nervous and Mental Disease, September, 1896.

D. N. KINSMAN, M. D., Columbus. I think we should hail anything which throws light on the etiology of epilepsy. We thought we had stuck a pin in it when Dr. Bevan Lewis gave his opinion that epilesy was due to changes in the third layer of the cortex. Dr. Langdon speaks of inhibition. But the fact is there is something that may be called into action suddenly which will overcome the inhibitory bond and the result is an epileptic spasm that is self-limited. You know that the attacks ot epilepsy, when once induced, go on until there is a certain exhaustion takes place, and then convulsions cease until there is a certain amount of energy stored up. Now, bearing on this subject, we did have several years ago published by Bouchard, a series of researches on the urine and the toxic principles contained therein. We have a condition that we call uraemia. Now, you don't always have uraemic convulsions when you have uraemia. Yet those come from a failure of the kidney to perform its physiological function in the usual way. In one person it will produce convulsions and in another it will produce coma. Now, it is not far to go to say that investigation may sometime put us on the track of a peculiar putrefaction going on in the intestines that shall produce a poison, that shall not be eliminated in the kidney, that may produce the same state we have in uraemic convulsions. It disorders inhibition. The exciting factor is there and we have the centers poisoned by some toxic substance. We shall find, gentlemen, that there is a great deal more in autointoxication than we have heretofore supposed. In some cases experiments have shown there is something in the liver that destroys the ptomaines that are produced, so it is possible there is a metamorphosis in the liver that has been arrested and out of that comes the epileptic seizure. I think this is a step in the right direction if we can follow it up. Even if post mortems shall show meningeal patches, softening and tumors in the motor zones or degenerations in the horn of ammon, it is still quite possible for toxic products to be produced in the body which will favor the convulsive explosion we call epilepsy.

Remarks by DR. E. G. CARPENTER, Cleveland. I think the society is to be congratulated that one ray of light has finally come from our great institutions,

in this dark field of pathology. This is the first report I have ever heard from the great institutions of the state of Ohio. In regard to the cause of epilepsy being, as the writer says, an anæmia ot the brain or a toxæmia of the brain, it seems that we are not as yet ready to accept the results of this investigation. If it were an anæmia of the brain, it seems that we would be able to produce epilepsy by certain drugs, such as the bromides, which we know from experiments do produce anæmia, and we ought to have convulsions in all conditions in which we have anæmia, especially pernicious anæmia, where there is without doubt an anæmia of the brain. One exception I take to the results is the examination of the urine being after the attacks. Anyone who will examine the urine after attacks of epilepsy will find one toxic element, that is albumen, which is present when there is any disease causing convulsions. Everybody knows that after extreme excitement, mental or nervous, the urine will contain a large amount of urates and phosphates and other elements. It seems that to prove there is a toxic element in the urine, which by experiment causes epilepsy in animals, the toxic element should be found in the urine before the convulsion, or should be found in the excreta as taken from the intestine. I am still inclined to adhere to the doctrine of Jackson, that the cause of epilepsy lies inherent in unstable brain cells. I believe every epileptic in the first place has a neuropathic constitution, a constitution which has a tendency to take on nerve diseases. The nerve cell itself is first weakened by the first attack. The first convulsion might be due to a toxæmia, but after the habit is established, of the brain cell discharging and throwing its energy down the nerve paths thus throwing the patient into convulsions, I believe this is a pathological state independant of any toxæmia. I believe real peripheral epilepsy may be a result of ptomain poisoning. It is often found, that by relieving the bowel the convulsions will cease; and in persons having large amounts of material in the stomach, when relieved by emesis the convulsions will cease. It seems, therefore, that as yet we must cling to Jackson's theory of discharge of the cortical brain cell as the basis of epilepsy, until we have something more positive to substitute.

DR. JOHN G. SPENZER, Cleveland: I would like to ask whether toxines ars not to be found in the urine normally. Also, I would like to ask whether excessive urea or uric acid would not produce convulsions. I would like to take issue with Dr. Kinsman about "fermentation" in the bowel producing toxines; I think it is more properly putrefaction. Then, I would like to ask the Doctor, how about the bromides relieving epilepsy, if it is not by lowering the excitability of the cortex.

DR. KINSMAN: I wish to say, if I used the word "fermentation," I meant putrefaction.

Remarks by DR. JULIAN HARMON, Warren: *Mr. President:* I once had an epileptic under my care, a short fellow with a weak mind, 35 years old. One morning immediately after breakfast, about half past six, he had a series of very severe convulsions. He was in the infirmary and was allowed to lie in bed and soon became comatose, cold and apparently dead. The temporal artery was cut at 5 P. M., and the blood squirted freely. I bled him about three pints and then gave him calomel, and he has never had an attack of epilepsy since. The question occurs to my own mind, how could an anæmia of the brain have been so persistently recurring in a man with such a big chest and big head, although he was weak minded, and how could that have been recurring every few days since childhood, and all have been stopped by cutting off the temporal artery. I will leave that with those who make a specialty of epilepsy, to explain.

A. M. BLEILE, M. D., closed the discussion on his paper as follows:

MR. CHAIRMAN: With regard to the first speaker, I omitted the theory of discharge as a theory of epilepsy. When we say the nerve cells discharge, we state something we know nothing about as an explanation for something else we know nothing about. I was trying to get something more complete. We are not sure that the cells are defective. Some of these epileptics are as bright as anybody. They will respond to stimuli and are in every way more irritable and probably more ready to respond to stimulation than other people. In taking the view that it is an inhibition, we would have to come down to this, that it is the higher cortical centers that inhibit the lower,

and that would bring us to the old view that epilepsy is of bulbar origin and not cortical. We cannot get the full picture of epilepsy from the bulb. In animals we can get epilepsy from stimulation of the cortical centers, and we cannot get it if we ablate those centers. For that reason I do not hold the theory of inhibition of the higher centers. The explosion, if we wish to use that term, is in the nerve cells that are directly affected by the anæmia. Another speaker made the remark that not every case of anæmia shows epilepsy. That I referred to in my paper. There must in some way be produced a hyperirritability. We have plenty of carious teeth and intestinal disturbances, etc., which are undoubtedly the predisposing factor in epilepsy, yet they need a brain with ganglionic cells in a particularly loose state of equilibrium. Albumen in the urine does not exist, I must differ from the speaker, in the majority of cases after an attack. We have examined quite a number of cases and in a small number only have we found albumen. A number of authors agree on this point, that albumen is not always found in the urine after an epileptic attack. That the urine should contain the toxines after the discharge, is likely, because the toxines are contained in the body at the time of the attack and would soon appear in the urine. Another speaker, I believe, asked whether toxalbumins could be found in normal urine. That is a question. It is stated by some that toxalbumin is never found in normal urine, or when it is found in the normal urine the patient is suffering from catarrh or something else. We can get from the urine after epilepsy a crystalline body, which will invariably produce epilepsy. From normal urine we get a body, sometimes fatal to animals, but fatal in the same dose after a much longer time and without the production of the convulsions. Urea will not produce epilepsy. It is not a very poisonous subtance. Large doses may be given without producing special symptoms, beyond polyuria. Uric acid will not produce such bad symptoms, either. The uric acid percentage is not raised in epileptics before or after the attacks. In our patients it was below that which Haig gives. That is due to the fact that they received less meat diet than others. I injected into rabbits large doses of uric acid, and the person who was assisting me in the matter took considerable interest in the subject and volun-

tarily took on several days doses of uric acid. Although he before had had epilepsy, he had none after taking the uric acid. He said, but this I would rather refer to a Christian Science cure, that he felt better after taking the uric acid.

THE ESTABLISHMENT OF A STATE PATHOLOGICAL INSTITUTE.

BY

H. C. RUTTER, M. D.

Manager The Ohio Hospital for Epileptics.

Until very recently, Ohio has never made an effort through her State machinery, to add anything of value to the knowledge of science as applied to medicine. With all the richness of material she has had at her disposal, and the millions she has expended in taking care of her afflicted by providing homes and attention for them, nothing has been done further than to mitigate suffering and supply means for comfort, as far as attractive surroundings and kind attention could be made to do so. No intelligent effort has been made, either to discover the source of diseases, its cause and essence, or its prevention. Great advances have been made in all other directions in our public institutions. Buildings have been improved, both in plans and arrangement, and have been at the same time, greatly reduced in cost. New and advanced systems of management have been adopted, to the wonderful betterment of the conditions surrounding the inmates. Good management and economy have gone hand in hand until it would seem that in this respect, the public institutions of Ohio, are all that could be hoped for, and, it is not an extravagent statement, to say they are not excelled anywhere in the world. And yet, what have they done for science? In what manner have they materially advanced medical knowledge? After a pretty

thorough acquaintance with them, ranging over more than a quarter of a century, I am at a loss to point to any especial addition they have made to the mass of medical knowledge. The cause of this failure to make use of the almost unlimited material at their disposal, for the advancement of knowledge, is usually attributed to political interference. I think this is an erroneous view. Partisan politics has occasionally extended its unwholesome influence over our public institutions and choked down all efforts at good or even decent management, but the greater part of the last thirty years has been free from its malevolent control. A moment's reflection will show that scientific investigation should have occurred, in spite of bad politics, even if in spots. But it has not been in evidence, no matter what the conditions have been. That is to say, with the exception of here and there a very laudable but spasmodic effort, nothing has been done worthy of moment, in the way of original research work. In fact, it has not been possible, under existing circumstances, to carry forward work of this description. Take for example, our largest state hospitals, with a population of 1,300 patients each, four thousand dollars, per annum, is the highest sum appropriated for all of medical supervision. This sum is expected to pay five physicians. One thousand two hundred dollars for the chief, and seven hundred dollars each, for four assistants. In addition to his medical work, the chief physician is also the chief executive officer, and is charged with the responsibility of the entire management, under a board of trustees, financial as well as medical. It will readily appear, that after he conscientiously overlooks all the details of so vast an establishment, he has but little time or heart for scientific investigation, even should he be possessed of the requisite knowledge to conduct it. Throughout the state, during the last year, the sum of one million and forty-seven thousand dollars was appropriated by the legislature, for the care and maintenance of 6,786 sick people, and but

twenty-one thousand two hundred dollars for their medical care, which included as well, the supervising responsibility for all the expenditures of the general management of seven large establishments. Herein, I think, lies the whole difficulty. Nothing has been set apart for the investigation of diseases, in the way of equipment, either of men or materials. It is true, appropriation was made by the last general assembly, for the Columbus State Hospital, of six hundred dollars for a pathological laboratory, which is certainly a step, though a very small one, in the proper direction. Scientific work, therefore, is left to a class of young men, who are willing to exchange their time and knowledge for seven hundred dollars per annum, and incidentally visit and listen to the tales of woe of from three hundred to four hundred over-burdened patients daily. Need one wonder, therefore, that the seven thousand patients, cared for annually in Ohio, have added but little to man's knowledge of disease, further than to cultivate the minds of the very few who have lived and walked with them daily.

I have dwelt somewhat tediously upon these conditions in order that you might more fully realize the almost absolute hopelessness of improvement under present conditions, and earnestly ask your thoughtful consideration of the means suggested, to secure to science the rich material offered by the public institutions of Ohio. My suggestion is, the establishment of a State Pathological Institute. It would scarcely be pardonable for me to take up your time with a recapitulation of well known facts concerning the importance of state aid for laboratory work. Those who spend their time in research work must have the means of living, independently of that work, for it does not usually bring them an income. All of the modern advancements in bacteriology and kindred sciences have been made under the stimulus of state aid. The German and French and Italian laboratories have far surpassed all other countries in

this respect. The work pursued under the patronage of the general government of this country has been prolific of the best results, and although mainly directed to the protection of animals, has resulted in the saving of many millions of dollars by leading to better methods of treatment and prevention of diseases to which they are subject. If the lives of so many animals have been saved by encouragement by the state, of scientific investigations of their diseases, how much stronger the requirement becomes to lend the same assistance for the encouragement of science in saving human life. All of the important discoveries made in this country in the line of research work, have been made by men employed either by the state or by well endowed corporations. Michigan owes its pre-eminence in this work to the laboratories of the state university at Ann Arbor. Maryland to its well-endowed Johns-Hopkins University, while New York is, I believe, the first state to inaugurate a pathological institute, separate and apart from any institution of learning, and intended to work up the material furnished by the state hospitals. Three years ago a laboratory for research work was opened at The Ohio State Hospital for Epileptics, at Gallipolis. The first year Dr. Mead Bolton did some very interesting work on the blood. He was followed by Dr. Bleile, of the Ohio State University, whose work on the urine and the contents of the alimentary canal in epilepsy was of the most interesting and instructive character. The main obstacle to success here, however, has been the expense attending the enterprise, as the hospital has been unable to carry along more than one branch of research work. While experience affords the strongest plea for the consolidation of the different branches, under the directorship of one individual. Such is the plan I have now to propose in the establishment of a state institute. This institute might be conducted in connection with one of the state hospitals, or as an independent institution, according to the wisdom of the general assembly. The first desidera-

tum is to make a commencement. It should be furnished with all the latest apparatus and appliances for thorough research work, and talent from the best laboratories of the world should be employed to conduct it. It should be divided into pathological, bacteriological and chemical departments, all of which should be so equipped with men and apparatus, that they would command the attention of and work in harmony with all of the best laboratories of the world. It should have access to all of the material to be found in the state hospitals, and be furnished with such histories and records as it might call for. All assistant physicians in the state hospitals should be required to spend a certain portion of the year as assistants in the Institute, and if found deficient, after from three months training, should be excluded from public service. Thus the wards of the state would be under intelligent medical care, and the records and histories could be so regulated as to prove of immense value, supplanting the mere statistical tables that are now furnished. Many of the details upon which some differences of opinion may now exist, could be very easily arranged. The location of the institute, the methods of conducting the work, whether it should be done at a central point, or portions of it at different hospitals, and how it shall be divided, are all questions of detail that may well be left to the wisdom of those to whom the direction is finally intrusted. The main thing for the profession of the state to consider, is the best method of bringing about the necessary legislation for the inauguration of the enterprise, and if this paper shall have been the means of concentrating the attention of the profession upon the subject, it will have accomplished all that can be desired. The expense of such an institute, if divided among the seven state hospitals now in existence, would amount to but a trifling per cent. of the present outlay for many other purposes, which to my mind, cannot be compared in importance to the one under consideration. In these days

of hustling activity, when so many eager eyes are peering through microscopes and the fumes from so many chemical appliances are arising on all hands, and the alert bacteriologist is so industriously inspecting new cultures and isolating new toxins, and searching for their antagonists, Ohio should not longer play the laggard, but should join the procession of splendid workers, make her name as illustrious in medical annals as it already is in the political history of our nation.

A REPORT ON THE USE OF ANTITOXIN IN THE TREATMENT OF DIPHTHERIA IN OHIO.

BY

C. O. PROBST, M. D., SECRETARY OHIO STATE BOARD OF HEALTH.

In presenting this report the object has been to show the results, as far as can be shown by the statistical method, of the use of antitoxin in the treatment of diphtheria in our own state, and at the same time show how it is being used as regards size and number of injections, day of use, kind of antitoxin, age of patients, etc. All of the antitoxin statistics with which the writer is familiar give only the cases treated with antitoxin, and in contrasting the results with other methods of treatment cases are taken which occurred at a different period of time, or in an entirely different locality.

Authorities agree, and it is the experience of all physicians of long practice, that diphtheria varies very much in fatality in different years and in different places, and it was thought to be of much greater value, in comparing cases treated with antitoxin with those treated without, to select cases of the same time and place. This report, therefore, deals with cases of diphtheria, treated without and with antitoxin, occurring in Ohio during the year ending February

28, 1897. This was a specially favorable time for such an inquiry to be made, as our state suffered severely from diphtheria during a part of that year, and there seemed to be a larger per cent. than usual of cases of the laryngeal variety.

It may be stated now that the writer took up this inquiry without prejudice, being in doubt as regards the results claimed by the pronounced advocates of the antitoxin treatment; but a careful study of the "brute force of figures," as Virchow called it, here presented, has convinced him that antitoxin, properly used, is undoubtedly an agent of much value in the treatment of diphtheria.

Reports of cases were secured as follows: Blanks were sent to the health officers of the various cities of Ohio, requesting the names of physicians who had reported diphtheria or membranous croup during the year. A sufficient number of blanks were furnished to physicians, whose names were so obtained, to report their cases. Following is a copy of the blank used:

REPORT TO THE STATE BOARD OF HEALTH ON CASES OF DIPHTHERIA AND MEMBRANOUS CROUP TREATED WITH AND WITHOUT ANTITOXIN DURING THE YEAR ENDING FEBRUARY 28, 1897.

1. Name of Patient (initials sufficient)?
2. Age of Patient—Years? Months?
3. Diagnosis { (1) Diphtheria? (2) Membranous Croup?
4. Diagnosis—confirmed by { (1) Presence of other cases in the family. (2) Bacteriological cultures?
5. How many days and parts of a day after the first appearance of the disease was Antitoxin first administered?

6. How many doses of Antitoxin administered?
7. Dose of each injection in Antitoxin units?
8. Whose Antitoxin used?
9. Non-operative cases—evidence of laryngeal invasion?
   - Appearance of membrane elsewhere?
   - Hoarseness?
   - Aphonia.
   - Stenosis?
10. Operative cases
    - (1) Intubation? On what day?
    - (2) Tracheotomy? On what day?
11. How long, in days and fractions of a day, was tube in the larnynx or trachea?
12. Sequelæ (in recoveries)
    - (1) Broncho-pneumonia?
    - (2) Paralysis?
    - (3) Nephritis?
13. Death, cause of; and on what day?
    - (1) Broncho-pneumonia?
    - (2) Extension of membrane to the bronchi?
    - (2) Sudden heart paralysis?
    - (4) Nephritis?
    - (5) Sepsis?
    - (6) Accidents of operation?
14. Recovery?
15. Duration of disease in days?
16. Remarks, especially on fatal cases? (Write on opposite page.)

Signed, Name.....

Address.....

NOTE.—In questions Nos. 3, 4, 9, 10, 12, 13, answers may be made by *erasing the printed answers not applicable to this case.*

This form was used in order that comparisons could be made with the reports of cases collected by the American Pediatric Society for the year ending April 1st, 1897, the forms used being almost identical. Over 6,000 of these blanks were sent out, but a much smaller number was returned, and many of these so imperfectly made out as to render them useless for most purposes. This will account for seeming inaccuracies in the totals given in some of the tables.

GENERAL STATEMENT.

Total number of cases reported	2,527	
Total number of deaths	386	
Mortality, per cent		15.2
Total number cases treated without antitoxin	1,475	
Total number deaths in cases treated without antitoxin	250	
Mortality, per cent		16.9
Total number cases treated with antitoxin	1,052	
Total number deaths in cases treated with antitoxin	136	
Mortality per cent		11.9

TABLE NO. 1.—Showing number of cases and deaths by age periods.

Ages in years.	Under 1 yr.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.
Cases	33	88	155	167	202	786	456	164	2,051
Deaths	11	22	40	50	42	131	41	7	344
Mortallty, per ct...	33.3	25.0	25.8	29.9	20.8	16.6	8.9	4.2	15.9

This table throws out of account 476 cases and 40 deaths, which were not reported with sufficient accuracy to be used except for the general statement. This slightly increases the mortality per centage in both classes of cases, but does not materially alter their relative proportions. The greatest number of cases, 786, occurred between the ages of 5 and 10. The mortality for this period was 16.6 per cent. The greatest mortality was under one year of age, one-third of the cases dying.

There were 645 cases reported under 5 years of age, with 165 deaths, equal to a death rate of 25.6 per cent.

There were 1,406 cases over 5 years of age, with 179 deaths, equal to a mortality of 12.7 per cent. Forty-five per cent. of all the deaths were of children under 5 years.

Of the 2,051 cases, 7.2 per cent. of those that died were under 5 years, and 8.1 per cent. over 5 years.

TABLE No. 2.—Showing number of cases and deaths treated without and with antitoxin by age periods.

WITHOUT ANTITOXIN.

Ages in years.	Under 1 yr.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.
Cases	22	33	74	73	107	441	291	112	1,153
Deaths	6	11	18	23	31	87	29	7	217
Mortality, per ct.	27.7	33.3	24.3	33.3	28.9	19.7	9.9	6.2	18.9

WITH ANTITOXIN.

Cases	11	55	81	94	95	345	165	52	898
Deaths	5	11	22	23	11	44	12	.....	127
Mortality, per ct.	45.4	20.0	27.3	23.4	11.5	12.5	7.3	.....	14.1

Eleven hundred and fifty-three cases, 54 per cent. of the whole number, were treated without antitoxin. Of this number 217, or 18.9 per cent. died.

Eight hundred and ninety-eight, 44 per cent. of the whole number, were treated with antitoxin, and 127, or 14.1 per cent. of the cases died.

This includes all the antitoxin deaths whether the injections were made early or late in the disease. Nineteen of these deaths occurred in patients who were moribund, or in a profoundly septic condition at the time of the first injection, or patients who died late in the disease a few hours after antitoxin was administered. Further reference will be made to these cases.

Rejecting these deaths, as may be fairly done, and we have 879 cases treated with antitoxin, and 108 deaths, or 12.3 per cent.

Of 309 cases under five years treated with antitoxin, 94 died, or 30.4 per cent.

Of 336 cases under five years treated with antitoxin, 71 died, or 21.1 per cent.,

Of 844 cases over five years treated without antitoxin, 123 died, or 14.6 per cent., while of 562 cases over five

years treated with antitoxin, 56 died, or 9.1 per cent. All of the antitoxin deaths are included in these figures.

There is also a distinct gain for cases in adults, and in children over 10, cases in which it has been claimed antitoxin has little effect.

There were 403 cases of over 10 years treated without antitoxin with 36 deaths, or 8.9 per cent., and 217 cases of the same age period treated with antitoxin with only 12 deaths, or 5.5 per cent.

There were 112 cases over 20 years treated without antitoxin with 7 deaths, or 6.2 per cent., while in 52 cases over 20 years treated with antitoxin, none died.

TABLE No. 3—Showing cause of death in cases treated without and with antitoxin by age periods.

WITHOUT ANTITOXIN.

Ages in years.	Under 1 year.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.	Per cent.
Broncho-pneumonia	.....	.....	.....	2	2	1	1	.....	6	2.8
Extension of membrane to bronchi	1	5	8	18	14	28	4	.....	78	35.9
Heart paralysis	2	1	3	4	9	30	9	.....	58	26.7
Nephritis	1	.....	1	1	.....	3	2	.....	8	3.7
Sepsis	.....	2	3	1	5	16	8	3	38	17.5
Accidents of operation	.....	.....	.....	.....	.....	1	1	.....	2	0.9
Not stated	2	3	3	2	1	8	4	4	27	12.4
Totals	6	11	18	28	31	87	29	7	217	.....

WITH ANTITOXIN.

Broncho-pneumonia	.....	1	.....	1	.....	2	.....	.....	4	3.1
Extension of membrane to bronchi	1	2	9	9	5	13	1	.....	40	31.5
Heart paralysis	1	4	4	6	2	12	3	....	32	25.2
Nephritis	.....	.....	1	1	.....	2	1	.....	5	3.9
Sepsis	1	3	4	4	2	11	5	.....	30	23.6
Accidents of operation	.....	1	.....	.....	.....	1	.....	.....	2	1.6
Not stated	2	.....	4	1	2	3	2	.....	14	11.0
Totals	5	11	22	22	11	44	12	.....	127	.....

The information given by this table is not wholly reliable as in many of the reports more than one cause of death was

given, and it was sometimes impossible to certainly determine the exact cause of death. Where death was reported as due to sudden heart paralysis and some other cause, the heart paralysis was accepted as the cause of death. In cases where death was reported from broncho-pneumonia and extension of the membrane to the bronchi, the latter was selected as the cause of death.

Accepting the table as approximately correct, it would indicate that there was no tendency for the antitoxin to increase the perils from heart paralysis or nephritis which has been claimed by some to be one of the dangers in using this remedy.

Twenty-six and seven-tenths per cent. of the deaths without antitoxin occurred from heart paralysis, and 3.7 per cent. from nephritis, while there were 25.2 per cent. from heart paralysis in the antitoxin cases, and 3.9 per cent. from nephritis.

The odds show slightly in favor of antitoxin as regards the tendency to produce death by extension of the membrane to the bronchi. If the deaths are excluded where the antitoxin was not administered until very late in the disease, or until the patient was practically moribund, the antitoxin would show much greater gains in this direction.

The deaths from sepsis were greater for the antitoxin cases than for those without, but this difference disappears if we leave out of account those cases where antitoxin was given after septic poisoning had already appeared, at which time it is probable that antitoxin has but little effect.

TABLE NO. 4—Showing duration of disease and cause of death in fatal cases treated without and with antitoxin.

Time in days.	Without Antitoxin.					With Antitoxin.				
	Under 7.	Under 14.	Under 21.	Under and over 28.	Not stated.	Under 7.	Under 14.	Under 21.	Under 28.	Not stated.
Broncho-pneumonia	3	2	1	.....	.....	3	.....	1	.....	.....
Extension of membrane to bronchi	60	14	4	.....	.....	35	2	2	.....	1
Sudden heart paralysis	35	17	2	4	.....	25	5	1	.....	1
Nephritis	3	2	3	.....	.....	3	1	1	.....	.....
Sepsis	22	9	5	1	1	18	11	3	.....	3
Accidents of operation	.....	.....	.....	.....	2	.....	.....	.....	.....	2
Not stated	12	2	2	.....	11	10	2	1	.....	1
Totals	135	46	17	5	14	89	21	9	.....	8
Per cent.	62.2	21.2	7.8	2.3	6.5	70.1	16.5	7.1	.....	12 6

This table does not show much difference in the duration of the fatal cases whether treated without or with antitoxin.

In the cases treated without antitoxin 62.2 per cent. of the deaths occurred during the first seven days, while 70.1 per cent. of the deaths in the antitoxin cases fell in the same period.

TABLE NO. 5—Showing cases and deaths by day on which antitoxin was injected.

Days.	1	2	3	4	5	6	7	8	9	10
Cases	295	255	168	82	71	23	16	14	6	6
Deaths	18	28	25	15	18	8	6	5	1	2
Per ct. of deaths.	6.1	10.9	14.8	18.3	25.3	34.8	43.7	35.7	.....	.....

This table shows the importance of the early administration of antitoxin.

In 295 cases injected on the first day of the disease there were 18 deaths, 6.1 per cent.

In 550 cases where antitoxin was used the first or second day there were 46 deaths, or a death rate of 8.3 per cent.

But 218 cases injected from the fourth to the tenth day of sickness resulted in 55 deaths, or 24.1 per cent.

TABLE No. 6.—Showing number of cases treated without and with Antitoxin, in which intubation was performed, with death and age periods.

WITHOUT ANTITOXIN.

Ages in years.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	Not stated.	Totals.	Mortality per cent.
Cases	2	2	4	4	9	2	.....	23	.....
Deaths	1	.....	3	3	7	2	....	16	65.2

WITH ANTITOXIN.

Cases	4	10	7	14	28	4	5	72	.....
Deaths	1	3	4	3	11	1	1	24	33.3

There were 95 cases altogether in which intubation was performed. Forty, or 42.1 per cent. of these died.

Antitoxin shows a decided advantage in these intubation cases. There were 23 intubations without antitoxin, 16 of them fatal, or 65.2 per cent.; while of 72 intubations cases that received antitoxin, only 24, or 33 per cent, of them died. Thirty-five of the antitoxin cases (in five the age was not reported), were under five years, and 32 were beyond.

TABLE No. 7—Showing day on which intubation was performed for cases treated without and with antitoxin.*

WITHOUT ANTITOXIN.

Days.	1	2	3	4	5	6	7	8	Not stated.	Totals.
Cases	.....	2	3	3	2	3	2	3	.....	23
Deaths	.....	1	3	2	1	3	1	2	.....	16

WITH ANTITOXIN.

Cases	9	20	16	12	7	1	.....	2	3	67
Deaths	4	7	6	3	2	.....	.....	.....	.....	23

*Of the intubation cases without antitoxin there was also one case each on the 9th, 11th and 16th day respectively, all fatal, and one on the 10th and one on the 12th day that recovered. In the intubation cases with antitoxin there was one case on the 10th day and one on the 14th day that recovered, and one the 13th and another on the 16th that died.

The number of cases is perhaps too small for just comparison, but the table indicates that in cases receiving antitoxin where it became necessary to intubate after the third day, the chances for recovery were much greater than in those treated without antitoxin.

Of 18 cases treated without antitoxin, intubation being performed after the third day, 12, or 66.6 per cent. died.

Twenty-seven cases treated with antitoxin and intubated after third day, resulted in 7 deaths, or 29.6 per cent.

TABLE No. 8—Showing number days tube was retained in larynx in cases treated without and with antitoxin, by age periods.

WITHOUT ANTITOXIN.

Days.	Under 1 year.	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	Totals.
Cases	4	3	4	1	4	1	4	.....	.....	21
Deaths	4	3	4	1	.....	1	1	.....	.....	14
Totals	8	6	8	2	4	5	5	.....	.....	35

WITH ANTITOXIN.

Cases	6	10	13	4	14	3	1	6	3	60
Deaths	5	3	7	1	2	.....	.....	.....	.....	18
Totals	11	13	20	5	16	3	1	6	3	78

There were four tracheotomies in which antitoxin was not used. Three of these resulted fatally, one from the operation. The case that recovered, a child two years old, wore a tube ninety-one days.

There were also four tracheotomies in which antitoxin was used, with three recoveries; one, a child under two years, and two children between five and ten years.

TABLE No. 9—Showing number of cases with recovery, without and with antitoxin, in which paralysis, nephritis or both developed as sequelæ.

WITHOUT ANTITOXIN.

Ages in years.	Under 1 year.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Total.
Paralysis	1	.....	3	2	2	19	26	17	70
Nephritis	.....	.....	6	4	4	23	11	5	53
Both	.....	.....	.....	1	.....	6	10	.....	17
Total	1	.....	9	7	6	48	47	22	140

WITH ANTITOXIN.

Paralysis	.....	1	3	5	4	17	9	7	46
Nephritis	.....	.....	5	1	5	17	5	1	34
Both	.....	2	2	.....	.....	6	1	2	13
Total	.....	3	10	6	9	40	15	10	93

Paralysis or nephritis developed in 233 cases, or 14.5 per cent. of the entire number of cases which recovered, 1607.

Paralysis, with or without nephritis, appeared in 146 of these cases, or 9.8 per cent.

There were 65 cases of paralysis or nephritis which developed in children under five years, or 13.5 per cent. of all cases under that age that recovered; and 172 cases in children over ten, or 14.1 per cent. of those over ten that recovered.

There is not a great difference between cases treated with or without antitoxin as regards the percentage that developed sequelæ.

In the 936 cases that recovered, treated without antitoxin, 140 showed paralysis or nephritis, which is 14.9 per cent.; while in 671 antitoxin cases that recovered, 93, or 13.7 per cent. developed these sequelæ.

Taking the cases that showed paralysis (leaving nephritis out of account) and a difference in favor of antitoxin is found.

Nine and three-tenth per cent. of the cases treated without antitoxin developed paralysis and only 5.5 per cent. for the antitoxin cases.

TABLE NO. 10—Showing number of injections of antitoxin, by age periods.

Ages in years.	Under 1 year.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.
One injection	7	33	53	66	62	229	127	28	605
Two injections	3	19	24	21	32	97	35	7	238
Three injections	1	1	4	3	3	26	5	1	44
Four or more injections	.....	2	6	4	3	6	1	2	24
Totals	11	55	87	94	100	358	168	38	911

Six hundred and five, or 64.2 per cent., received only one injection, 238 received two injections; 44, three injections, and 24, four or more injections. In one case which recovered, eight injections, aggregating 4,000 antitoxin units, were given.

TABLE NO. 11—Showing number of antitoxin units given at first injections, by age periods.

No. of units.	Under 1 year.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.
Less than 500	1	3	3	4	4	4	.....	2	21
500	7	18	17	20	15	48	28	7	160
1,000	3	24	50	51	63	240	119	32	582
1,500	.....	4	3	5	7	42	13	7	81
2,000	.....	5	8	12	6	11	5	4	51
Totals	11	54	81	92	95	345	165	52	895

Five hundred and eighty-two, or 65 per cent. of the cases received 1,000 units of antitoxin at the first injection. Seven of the cases under one year received 500 units. Only 51 cases received 2,000 units for the initial dose.

The following shows the kinds of antitoxin used, and the cases and deaths for each kind:

Kind of antitoxin.	No. cases.	No. deaths.	Per cent.
H. K. Mulford	521	70	13.4
Parke, Davis & Co	212	30	14.1
Behring	116	17	14.6
All others	58	10	17.3

In criticising the report up to this point the question will doubtless be asked—How many of these cases were true diphtheria, and how many were cases of simple angina that usually recover without treatment of any kind.

In answer to that, one might well say—There is no reason to believe that the proportion of cases of non-diphtheritic sore throat is greater among the cases here reported that received antitoxin than among those that did not; and taking the cases as they come, in every way in which they can be compared, and a marked gain in favor of those treated with antitoxin is found.

As a crucial test, all cases that did not show evidence of marked involvement of the larynx or air passages have been eliminated, and a comparison made between those that received antitoxin and those that did not. This includes all cases reported as membranous or diphtheritic croup, cases in which intubation or tracheotomy was performed, and all cases reported as diphtheria in which hoarseness and stenosis were present. In the latter cases there was also, in most of them, aphonia. The total number of these cases was 618, which is 29 per cent. of the entire number of cases reported.

TABLE NO. 12—Showing cases and deaths with invasion of the air passages treated without and with antitoxin, by age periods.

WITHOUT ANTITOXIN.

Age in years.	Under 1 year.	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Total.
Cases	6	16	32	41	44	107	26	5	277
Deaths	3	9	21	26	30	51	12	1	153
Per ct. of deaths..	50.0	56 2	65.6	63.4	68.2	47.7	46.1	20.0	55.2

WITH ANTITOXIN.

Cases	7	25	49	41	39	140	32	8	341
Deaths	4	8	18	13	9	35	6	.....	93
Per ct. of deaths..	57.1	32.0	36.8	31.6	23.1	25.0	18.9	.....	27.3

There were 618 cases and 246 deaths, equal to 39.8 per cent. Three hundred of the cases, or 48.5 per cent., were under five years. Fifty per cent. of those without antitoxin were under five, and 44 per cent. of the antitoxin cases. Fifty-eight and one-tenth per cent. of the deaths in both antitoxin and other cases were patients under five years.

The contrast in the laryngeal cases, between those receiving antitoxin and those that did not, is very marked.

Of the 277 cases treated without antitoxin 153 died, or 55.2 per cent.; while of 341 cases treated with antitoxin but 93, or 27.3 per cent. died.

Reference has been made to 19 fatal cases treated with antitoxin which could fairly be excluded. These were all laryngeal cases, and may be summed up as follows:

1. Intubation case. Tube coughed out in the night; physician not called in time, and child suffocated.

2. Injected with antitoxin on 10th day; died same day of sepsis.

3. Tracheotomy case; injected on 8th day and died same day.

4. Patient injected on 5th day and died four hours later of sepsis.

5. Child much improved; membrane gone; mother had it walk from middle of room to bed, and it died a few minutes later from heart paralysis.

6. Patient injected 6th day and died four hours later.

7. Injection on 5th day; child moribund; died same day.

8. Injected 5th day; bad case; died same day.

9. Injected 6th day; died six hours later.

10. Injected 5th day; advanced case; died eight hours later.

11. Child moribund; died one hour after injection.

12. Died a few minutes after intubation; accident of operation.

13. Injection on 10th day; child moribund.

14. Injection on 16th day; bad case; died same day.

15. Severe stenosis at time of injection; prepared for tracheotomy, but child died few hours after injection.

16. Leaky syringe; patient only got partial dose.

17. Injection 10th day; child moribund; died same day.

18. Died from sepsis eight hours after injection.

19. Injected 5th day and died a few hours later.

If it be permitted to subtract the 19 deaths from the laryngeal cases that received antitoxin we have 322 cases with 76 deaths, equal to 23.6 per cent.

There were two deaths which were possibly due to antitoxin, though there is no positive proof of this.

One child injected on the first day of the diseases died eight hours later. Another child injected on the first day, died two hours after injection.

TABLE No. 13—Showing cause of death by age periods in laryngeal invasion without and with antitoxin.

WITHOUT ANTITOXIN.

Ages in years.	Under 1 year	1 to 2	2 to 3	3 to 4	4 to 5	5 to 10	10 to 20	20+	Totals.
Broncho-pneumonia	.....	.....	.....	2	2	1	.....	.....	5
Extension of membrane to bronchi	1	5	10	17	15	20	3	.....	71
Sudden heart paralysis	2	1	4	3	6	10	4	.....	30
Nephritis	.....	.....	1	.....	.....	1	1	.....	3
Sepsis	.....	.....	1	1	4	10	3	1	20
Accident of operation	.....	.....	.....	.....	.....	1	1	.....	2
Not stated	.....	3	5	3	3	8	.....	.....	22
Totals	3	9	21	26	30	51	12	1	153

WITH ANTITOXIN.

Broncho-pneumonia	.....	1	.....	.....	.....	3	.....	.....	4
Extension of membrane to bronchi	1	2	9	6	4	11	2	.....	35
Sudden heart paralysis	.....	3	3	2	2	9	2	.....	21
Nephritis	.....	.....	.....	.....	.....	2	.....	.....	2
Sepsis	1	1	3	3	2	5	2	.....	17
Accident of operation	.....	.....	.....	.....	.....	1	.....	.....	1
Not stated	2	1	3	2	1	4	.....	.....	13
Totals	4	8	18	13	9	35	6	.....	93

To briefly summarize: There were 1,475 cases of diphtheria and membranous croup treated without antitoxin, of which number 250, or 16.9 per cent. died.

There were 1,052 cases treated with antitoxin, of which number 136 died, or 11 9 per cent.

There were 277 cases showing extension of the disease to the air passages in which antitoxin was not used, resulting in 153 deaths, or 55.2 per cent., and 341 such cases treated with antitoxin, of which number 93, or 27.3 per cent. died; or, subtracting 19 deaths where antitoxin was given too late to be of benefit, 76 deaths, or 23.6 per cent.

There were 23 cases not treated with antitoxin where intubation was performed. Of this number 16 died, or 65.2 per cent.

Of the 72 cases receiving antitoxin, intubation being performed, 24 died, or 33 per cent.

DISCUSSION.

DR. DAN. MILLIKIN, Hamilton. I do not know that I have ever in any Society heard a paper on antitoxin in diphtheria which so impressed me as the mass of statistics so well presented and digested by Dr. Probst. I have heard many papers on this subject, of course, but I could always see, as I thought, the personal element, the personal equation, obscuring the truth unconsciously to the reporter. But it seems to me the mass of statistics we have presented here today, summed up with infinite labor, is exceedingly convincing. I am not sure that I ever was under conviction (outside of church) until today.

DR. THOMAS HUBBARD, Toledo, Ohio: We are under obligations to Dr. Probst for presenting his statistics so clearly, and they correspond very closely with the statistics presented by the American Pediatric Society in Washington with especial reference to laryngeal diphtheria. In 1,700 cases, in which the reports were examined by Drs. Northrup, O'Dwyer and Adams, there was a mortality of 21 per cent. From a comparison of cases and the improvement in the rate where the larger doses of antitoxin had been given, they concluded that the mortality rate is still too high. It is, they say, probable that the mortality will be reduced from 21 per cent. to about 15 per cent.

But I wish to emphasize, in closing, the importance of laryngoscopic examination wherever possible in laryngeal diphtheria, and in nearly all cases I think you will find it possible. Accurate diagnosis of the cause of stenosis will give stability to statistical deductions, and aid very materially in deciding when and how to operate, and also when to avoid operation.

Closing remarks by DR. C. O. PROBST, Columbus. There is just one point, not alluded to in my paper, which I might speak of and which I think is very important. Dr. Abbott, the bacteriologist, made an examination of a number of antitoxines and observed the number of antitoxin units they contain and the number they advertise. In one sample obtained in New Orleans and one in this city, from the same maker and supposed to

contain the same amount, the variation was from 270 to 3,000 and something. I think we ought to call the attention of manufacturers to this, and that we should know the number of units we give our patients.

TYPHOID FEVER.

BY

JOHN ELIOT WOODBRIDGE, M. D., CLEVELAND.

The importance of my subject is sufficiently emphasized by the fact that in twelve of the principal cities of the United States (including the District of Columbia), there occurred during the decade ending with 1893 (the year in which I opened outside my local Society), the discussion on the possibility of aborting typhoid fever, thirty-four thousand, one hundred and thirty-five deaths from the disease. This is a larger number than had died during any previous like period in the histories of these cities. In some of them the number of deaths increased during nearly all of the time and is still increasing, notwithstanding the wonderful triumphs of sanitary science, and the vast sums of money that have been expended upon sanitary appliances for the prevention of the very class of diseases of which typhoid fever is the most conspicuous representative, and notwithstanding the marvelous discoveries of the bacteriologists and despite the palatial hospitals, the trained nurses, and the medical skill that have been devoted to the care of the patient and to the treatment of the disease.

According to the most trustworthy estimates typhoid fever alone costs the people of this country more than eighty, probably more than an hundred millions of dollars each year.

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*More than three-quarters of this paper and all of the clinical charts are omitted under Rule VI of the By-laws, O. S. M. S. W.

I crave your indulgence for alluding in this sordid, calculating way to the money value of sacrificed human life, but we live in a utilitarian age, and nothing so impresses the mind of many a modern legislator (to whom we must go for the enactment of sanitary laws), as the importance of arresting an annual waste of an hundred millions of dollars. I know of no way of measuring the actual cost of the disease—the suffering and agony of friends and relatives as they sit at the bedsides of victims of the disease or the grief and anguish of the heart-broken widows and orphans, who every year bend tearfully over the coffins of their dead. This is a loss to the families and to the nation which can never be paid for, and yet typhoid fever is both avoidable and preventable, and to prove that the disease is curable, I present to you the following reports of physicians who have treated typhoid fever by the method which I have advised.

The report covers every case of which I have any knowledge, in which this treatment (or any modification of it), has been claimed to have been used, although in many instances the formulæ or the directions for their application, have been so altered or modified that of the originals little was left but the name and even that was given in derision or contempt.

As extreme examples of the unwitting alteration or amendment of both formulæ and directions, the reader is referred to the report of Dr. D., who directed one grain of podophyllin and one drachm, each, of calomel and carbonate of guaiacol, to be divided into 5,516 capsules; and also to the account of another physician who, (taking his idea from the same paper), directed the same quantities of the same ingredients (which should be divided into 960 doses), to be exhibited in a single powder. Your attention is also called to the history of one of the cases of another Dr. D., who, because his patient had diarrhœa, omitted the administration of formula No. 1, which contained the remedies most plainly indicated and which would have arrested diarrhœa. Read,

too, the report of the distinguished gentleman in New York (whose great ability we all respect), but who, in this instance, acting on the theory that the podophyllin and calomel in Formulæ Nos. 1 and 2, are catharatics *only*, replaced these ingredients with Salts, despoiling the prescription of most valuable antiseptic properties.

A careful examination of these reports will show that much more than a majority of the deaths that are said to have occurred under this treatment may be accounted for by one of the following explanations—the prescriptions were not correctly written—the remedies were not properly prepared, or they were not scientifically administered—or the treatment was instituted at too late a stage of the disease.

I call your attention to the fact that in many instances in reporting the deaths, the physician signified that it was not intended that they should be included as deaths under the treatment.

This is a report of the results of the treatment of typhoid fever by a given method and it would have been quite proper to have omitted all mention of those cases or deaths in which the treatment was not used in accordance with instructions or was instituted after the patient was moribund It is not just to the method nor just to the physicians who have succeeded with it and have advocated its use, to debase or vitiate its death rate or the duration of illness with reports of failure for which it is in no way responsible. On the other hand if one known death or one failure is omitted from the report, its value would be impaired by the suspicion that others had also been left out. Therefore all are reported—those in which the treatment was instituted after the intestinal hemorrhage or perforation which caused the death had supervened—those in which the treatment was never fully instituted and even those in which the critics had blindly followed inadequate guides and loosely reported

their cases only to emphasize an adverse criticism of the method.

The purpose of the presentation of this report is to enable physicians to estimate the value of the treatment that has been used by these physicians, and to accomplish this it must be above suspicion and there must be no doubt of the accuracy of the reports—no doubt as to the correctness of the statistics and no doubt as to the justness of the conclusions, therefore the names and addresses of the observers are given in those instances in which permission to use the name had been granted. For this reason all unfavorable reports are included, in many of which it is known that the treatment was not properly applied.

REPORTS OF PHYSICIANS.

YOUNGSTOWN, OHIO, July 17, 1893.

J. E. WOODBRIDGE, M. D. *My Dear Doctor:* "I think the time is fully ripe for the announcement of your claim. Others have, of late been making investigations along the same line but you can confidently assert priority. Certainly no less than seven or eight years ago you revealed to me the essentials of your treatment. I sincerely hope that all you claim for the remedies will be substantiated fully and that its virtue will ultimately receive general recognition."

JOHN J. THOMAS,
Youngstown, Ohio.

Ten cases. No death.

"As you know I was one of the first physicians in this place to give your—or the antiseptic treatment of typhoid fever a fair trial. I have treated 112 cases in the last four years by it. When I get the treatment started within the first four days I expect to control the fever within the next ten days. If I did not treat all of my cases of typhoid fever by this method, I would feel that I had not done my duty by my patients. Being germicidal and antiseptic, it, in my

opinion, is the most rational treatment yet devised, and in my hands it has been by far the most successful."

JOHN MCCURDY,
Youngstown, Ohio.

"I am treating a good many cases of typhoid fever with success. The Sulpho-Corbolate of zinc boys are having a lonesome time." *Ibid.*

One hundred and twelve cases. Four deaths.

"I have used your treatment for typhoid fever for more than three years. During the first year I treated twenty-seven cases—all recovered—one had intestinal hemorrhage. As the treatment was new to me I did not have implicit confidence and possibly mixed too many other things with it. The highest number of visits to any one patient was twenty-two. The next year (1895), I treated seven cases, and the highest number of visits to any one patient was fourteen. During 1896 I treated twenty-three cases, with a maximum number of visits of ten. I have treated typhoid fever for more than twenty-five years and am familiar with its clinical characteristics. *Every* case I have enumerated was typhoid fever or *none* of them were, and you will see the improbability of a physician doing a general practice in Youngstown for three years without being called to a case of typhoid fever. I have treated one case this year."

WILLIAM C. STAFFORD,
Fifty-eight cases. No death. Youngstown, O., May, 1897.

"I wish to say that I have had experience with Dr. Woodbridge's treatment of typhoid fever and having followed cases with him, I know it will do all that he claims for it, if it is intelligently carried out. I have treated, and have seen Dr. Woodbridge treat the most severe cases with better results than I have ever known him to *claim*. The treatment far exceeds in value any other I have ever seen published or have heard of. I should consider

myself guilty of gross neglect of a case of typhoid fever which was under my care, did I not use the Woodbridge antiseptic treatment. I attribute my success in the cases treated by me to the close observance of his skilful manner of conducting the treatment in my own family. I have no use for question five."

JOSEPH O. YOST,
Youngstown, Ohio.

Fifteen cases. No death.

"I have treated by this method fifty cases. Average duration of treatment fifteen days. Deaths none. Treatment was begun about the third day of the disease I have had no complications in any of my cases. Convalescence has been highly satisfactory, rapid and permanent. In my opinion the remedies you advocate in the treatment of typhoid fever, judiciously used, will accomplish all you have claimed for them. In many of my cases the temperature reached normal about the 12th day of the treatment."

JOHN E. FACKLER,
Versailles, Ohio.

Fifty cases. No death.

"I treated twelve cases of typhoid fever with your three formulas. My second case this spring is now convalescing. I think well of the eliminative and antiseptic treatment and I am convinced that it is the best. About one-half of my cases last year aborted or were cut short within a very few days. I have had no delirium, no severe tympanites, no death. I think you have done the profession a good service in developing your plan of treating typhoid fever."

MATTHIAS BORTZ,
Cleveland, Ohio.

Sixteen cases. No death.

" I have not been able to abort all cases. I would like to talk matters over with you so that my work in the future may be as successful as yours. I have treated eighty-five cases. The average duration of the treatment has been

from ten to fifteen days; in a few cases of relapse it has been very much longer."

JOHN F. McGARVEY,
Eighty-five cases. No death. Lorain, Ohio.

"The case of which I wrote you was a typical one, imported from Cincinnati, from a building in which typhoid fever was prevailing. This is the only opportunity I have had of trying your treatment, but the first chance I have I intend to give it a fair trial, as I am very much impressed with what I have seen and heard of it and I believe in it. With best wishes."

JOHN H. CALDWELL,
One case. No death. Waverly, Ohio.

"My experience is limited to two cases under this treatment. The first case had been ailing a week or more and had been in bed for two or three days when I first saw her. She was about seventeen years of age. I found her with a temperature of 105, pulse 130, very restless and delirious. This was 11:00 P. M., of August 10th. I followed the general directions of the Woodbridge treatment as nearly as possible and she had a temperature of 98 on August 25th, after which I saw her no more. In the next case I began the treatment somewhat earlier, diagnosing the disease in my office. Lady about thirty years of age. Visited her at her house the next day and found the temperature 102. She was intelligent and fully appreciated her situation, having just lost her father by the same disease. I promised her a normal temperature in two weeks. The highest temperature was 103, and she was not very sick at any time. On the 14th day of treatment the thermometer registered 98 2-5. I had no troublesome tympanites or dry tongue, and in the first case the marked nervous symptoms began to subside with the fever from the beginning. I have used the remedies in some other cases of doubtful character and short duration.

I believe the treatment to be on the right line and shall continue to use it, confident that it will serve me well.

ORILLUS M. CORSON,
Middletown, Ohio.

Four cases. No death.

"I have treated several cases of typhoid fever with Dr. Woodbridge's treatment, and find that it will invariably cut the fever short, if commenced early enough in the disease, the illness lasting often only a few days, the temperature soon dropping to normal and remaining there. If I were stricken with typhoid fever, or one of my family were taken down with the dread disease, I think I would feel like sending for Dr. Woodbridge from the Atlantic Coast to the Golden Gate."

JAMES A. DICKSON,
Youngstown, Ohio.

Fifteen cases. No death.

"I have been using the treatment you advocate for the past three months in my work in the Harper Hospital and I am convinced that the method is all right. No cases died though I am sure they would have done so had any other treatment been carried out. I made the thirteen cases I had the subject of a paper which I read before the Detroit Academy of Medicine. I compared this plan with the work of two years ago. All were surprised at the remarkable descent of the fever line after a few days of treatment, but no one was more pleased than I at the record. It was so easy to give the medicines after the first twenty-four hours and so different from the tiresome Brand method of bathing, that I was delighted with it. I am heartily in favor of the method and feel satisfied with my first trial of it in the treatment of typhoid fever."

GEORGE DUFFIELD,
Detroit, Michigan.

"In all of the cases it proved satisfactory, shortening the disease and lowering the temperature. The cases were not selected, but are all that came under my care while I was on duty. There is no tendency to relapse, no unfavorable complications arise, and the bad effect of prolonged stimulation is done away with. I found the plan a most successful one, and heartily commend it to my fellow practitioners.

Ibid.

"As you are aware I have been for the last year a zealous advocate of your method of treating typhoid fever."

Twenty cases. No death. *Ibid.*

"My experience with your "plan" has been very extensive comparatively, since writing the paper and it only confirms my previous opinion of its merits. Out of some forty more cases I have had no fatalities. These were treated during last fall. If my feeble efforts are of any use to you they are yours truly. I feel very grateful to you for your writings and labors in this field, as they have been a great help to me."

P. A. GORDON,

Seventy cases. One death. Junction City, Ohio.

"In regard to my treatment of typhoid fever I will say, the cases which I have reported have been *truly* reported and I attribute the good results to the treatment. They have been, to all appearance, as severe as others treated on the old plan that have run from ten to fifteen days longer. Perhaps I may have had a fortunate run of cases, but I think not."

FREDERICK GROVER,

Sixteen cases. Two deaths. Fraser, Mich.

"We are having an unusual epidemic of typhoid fever in our locality. The source of contagion is of such a nature that the physicians of our town will have to contend with some hundred more cases. I am going to continue your treat-

ment in some twenty cases now under observation. I have followed very closely your directions and must say the effects have been wonderful. In no instance have I failed to relieve my patients within three weeks and often within two. In that time, understand, some of them were sitting up, others moving about and in a manner attending to their usual business. Many cases I have commenced upon when the fever had reached the 103° and 104° point. Of course they had no serious intestinal lesions; however, when I discover the matter has passed to an intestinal involvement I yet get splendid results. With anyone who uses your treatment and exactly as you direct, nothing but the most happy results will be the outcome.

CHAUNCEY I. BURT,
Lake City, Iowa.

1894.

"I note that you are to defend yourself * * * It does not seem to me that one ought to produce a defense in the line of argument; if any of the gentlemen will permit themselves to follow out your instructions and use your treatment—there would be no need of argument—they would coincide with all your views. It is just as positive that typhoid fever can be *aborted* by your method, as it is that it cannot be under any other treatment of which I have any knowledge. I have had some sixty cases during this winter and have made no mistakes in the diagnosis, as our most eminent local authorities have assisted me, from time to time, in the diagnosis. Typhoid fever in this country is now cleared up entirely, and I assure you that a personal reputation has been made by myself in handling the same, owing to thoroughly following out your antiseptic treatment.

1895.

"Since commencing your treatment, I have not lost a single case. The average duration was about two weeks, it should have been less, and was due to the poor nursing, etc. I never feel disturbed in treating typhoid

fever when following closely your instructions and using your formulas. I have tried modifications, but never with the same success. Other physicians at this point, have likewise had success in using the antiseptic treatment and now all admit of its being a specific.

1896.

"You have my experience of 1894-5. In 1896-7 to date I have treated twenty more cases with your treatment with more than former success, due, no doubt, to my better understanding the method. I have lost but one case, (a person 68 years old), in which I commenced the treatment in the third week. The symptoms were modified perceptibly in a few days, but due to age, emaciation, and subsequent hemorrhage, I was unable to cure the patient. The greater number of the physicians in this vicinity use this treatment."

19th of May, 1897.

Eighty-five cases. One death.

"I have treated twenty cases of typhoid fever by your method. In two cases there was intestinal hemorrhage. Ever since it has been my good fortune to use your valuable treatment, I have not lost a single case. I certainly think you have struck the keynote in the "abortive treatment of typhoid fever" and suffering humanity owes you a debt which it will be hard to pay. It is a great satisfaction to a physician to know that by his untiring researches he has saved the lives of so many of his fellow creatures."

JOHN A. DUNWODY,

Twenty cases. No death. Cripple Creek, Colorado.

"I have treated by the method you have advised thirty-seven cases of typhoid fever. Twenty-two of these were children under fourteen years of age and these were treated in The Orphan Asylum with which I have been connected for eighteen years. The remaining fifteen were adults. All

of these cases recovered except one—a feeble child which could not have survived any serious illness. The children recovered in one-half the time in which such cases usually recover. When the treatment was instituted in the very initial stages of the disease in the adults (as it was in about one-third of these cases) the treatment was not extended beyond nine days. One case had been under the care of another physician for about a week before coming to me. It was a typical and rather severe case but the temperature touched normal on about the seventh day of my treatment. Three of my patients were pregnant women but all made excellent recoveries without aborting. Heretofore, I have been, with one possible exception, the closest follower of the Brand method in the city."

HENRY C. BRAINARD,
Thirty-seven cases. One death. Cleveland, Ohio.

"I unfortunately have not kept a record of the patients treated by the Woodbridge method, but I do know that I have never had better success in the treatment of typhoid fever before I began using it. I have treated twelve cases, all of which recovered. I was called in consultation to see three of the cases, each of whom had been sick three weeks. I at once placed them on your treatment and improvement began in two or three days. In the other cases the average duration of the disease was not ten days. Hoping that this report may be beneficial to you in making your records."

JOSIAH J. HARRISON,
Twelve cases. No death. Loudon, Tenn.

"In most of my cases I have used the Woodbridge treatment alone, without auxiliary measures. I feed liberally, insist on cleanliness and plenty of fresh air. I have been able to keep the temperature down to 102½, 102 and 101, without arterial sedatives or any of the coal-tar prepara-

tions. I do not use the sponge bath as an adjunct. I believe with Dr. Woodbridge that every case can be cured if seen before the eighth day, unless there are very grave complications."

COLUMBUS N. UDELL,

Eighty cases. Three deaths. Blakesburg, Iowa.

"I send you twelve charts of cases treated by me, using your method, during the months of October and November, 1895, when an outbreak of typhoid fever occurred in our village.

"In September last I had one case, which I treated in my usual manner of baths and phenacetine, to reduce temperature, and salol and sulpho-carbolate of zinc as intestinal antiseptics, with the usual result of a normal temperature in the fourth week. When I began to use your method, it happened that several of the inhabitants of our town were afflicted with typhoid of no mild variety and I treated all but three of the cases. These were treated by antipyretics and expectancy, with the result of one death on the twenty-second day, one relapse after fifteen days—the second attack lasting four weeks, and the other cases terminating in recovery at the end of four weeks.

"The average duration of the cases under your treatment from the beginning till the temperature reached normal, was twelve days. I have seen in the late medical journals the unfavorable comments of some of the most eminent writers and practitioners of our country in regard to your method and will say with my distinguished teacher, William E. Quine, 'No one has a right to condemn it without proof.' Hoping that this meager account of the cases that were treated under my supervision will be of some service to you and to mankind."

WILLAM R. KELLY,

Twelve cases. No death. Watonga, Okla.

"I have treated twenty-seven cases of typhoid fever, using your prescriptions in all of them. Since I began using the antiseptic treatment, I have not lost a case. I am convinced that there is a great deal in it. I have great faith in it, for my cases have all done well."

THOMAS M. WRIGHT,

Twenty-seven cases. No death. Troy, Ohio.

"I take pleasure in reporting briefly that I have treated twenty cases by the antiseptic method, employing your formulæ in the main, and that there have been no deaths so far. The average duration of treatment has been about two weeks."

BOARDMAN REED,

Twenty cases. No death. Atlantic City, New Jersey.

"Treated by your tablets twelve cases and no deaths. Average duration about fifteen days. There were thirty or forty cases treated here last fall (an epidemic occurred) without a death in those cases that were treated by your method; although three deaths occurred under other treatment. I had two families in which there were two and three cases, respectively, one in each family being treated by the old plan, and each of these cases ran from three to four weeks, whereas the cases treated antiseptically ran a lighter and very much shorter course—about ten days. All cases getting the treatment early, showed emphatically the superiority of the abortive treatment."

LAWRENCE REYNOLDS,

Twelve cases. No death. Horton, Kansas.

"I enclose two charts of patients treated with your method or a slight modification thereof. The protracted case occurred in the practice of Dr. Mearns, and was given the drugs under my observation, and aside from relieving the delirium, which it did at once and the absence of all

complications, especially tympanites, the disease ran rather a long course. The other case is the one occurring among the civilians of the Post, in the service of Dr. Arthur, who kindly gave me permission to enclose the chart. These charts are at your disposal and need not be returned."

WILLIAM ROBERTS,
Two cases. No death. Fort Myer, Virginia.

"I am well satisfied that you have done a great thing for humanity in calling the attention of the profession to this method of treatment, and, while I cannot bring my mind to a full conviction that *every* case of typhoid can be aborted even when treatment is commenced at an early stage. I am fully convinced that *some* cases may be so abridged, and that *all* cases may be favorably modified and the natural course of the disease much shortened by carefully following your directions."

WILLIAM T. DODGE,
Fifteen cases. Four deaths. Big Rapids, Michigan.

"I have been using your treatment for over two years, and in that time I have treated forty-five cases of typhoid fever commencing at all stages of the disease—in several instances they were watching for the patients to die. Where I am called early I seldom treat a case over six or seven days, and the longest I have been compelled to treat a case was twelve days. Several of the cases were full blooded typho-pneumonia, and the worst case I had I took charge of on the 9th of April, and made my last visit to him on the 19th, when I left him in bed, but feeling well and without a trace of fever. Out of all these cases I have not had a death. I am fully satisfied with your treatment, and can cheerfully testify to the fact that you have in no way exaggerated the benefit that is to be derived by the adoption of your treatment. I have received many flattering reports from my medical exam-

iners from several different states. I am satisfied that the death losses in our Order have been lessened by the adoption of your treatment by the medical examiners and the physicians in general throughout our jurisdiction. With many good wishes for you and your treatment."

JAMES W. MORGAN,
Chief Medical Examiner, Home Forum Benefit Order,
Fifty-nine cases, no death. Moline, Illinois.

"My success with your treatment for typhoid fever has been wonderful, as you will see. I have treated fifty-nine cases without a single death. I have taken charge of all the cases as I found them, at all stages of the disease. I have treated one pregnant lady who made a good recovery and went to full term. I discharge all cases within an average period of ten days. Eight out of fifty-nine cases were complicated with pneumonia. I am fully satisfied with your treatment and believe that if seen early every case can be aborted. I am with you in any way that will cause our profession to adopt your treatment." *Ibid.*
May, 1897.

"I first used the Woodbridge treatment in the fall of '94. Treated twenty cases in the months of September and October, in the fall of 1895, and from August to October 25, 1896, I treated forty-one cases. This was the entire number of cases I had in that time. I had one death. Patient had been sick one week when I was first called, and lived about eighteen hours—*in fact she did not receive the treatment* I wished. The average duration in all cases where the medicine was administered as directed, was eleven days."

Hoping for your success.

JOHN M. MARTIN,
Seventy cases, one death. Grove City, Penna.
May, 1897.

"I am very much pleased with your treatment for typhoid fever. During the fall I treated seventeen cases of the fever—eight by the Brand method, with three deaths, and the next nine had your treatment *exactly* as you recommend it and all were out of bed inside of three weeks. Your method is rational, scientific and ideal, and should be given a fair test. The patient *must be saturated* just as you direct."

FRANK N. MEAD,
Bristow, Iowa.

Nine cases, no death.

"I have been treating typhoid fever by your method for the past two years, and during that time I have had 36 undoubted cases, with one death, a young lady aged 18 years whom I was called to see in the third week and who had been previously treated by an irregular. Soon after I saw her, perforation occurred and she died in about 36 hours. The average duration in the 35 cases, was 14 days. I have had only one relapse, a young man of 24 years, who ate heartily of fish, in very early convalescence. The second attack only lasted a few days and he then made a rapid recovery. Until I adopted your mode of treatment I thought (with many others) that we had very little influence in shortening the disease, but since I have used this treatment I am confident that we have not only the means of shortening *every case* (providing we see them early), but the ravages of the disease are prevented so that our patients make a rapid recovery and never have any grave sequelae. Soon after I became convinced that no other treatment could have the same results, I advised Dr. Caughlin, of this city, as well as my brother, Dr. G. W. Stone, of Metamora, Mich., to adopt it, which they did, with excellent results. I have learned that I get best results when I give early, rapid and large doses, there being little or no danger of producing the specific effect of the mercurial if saline cathartics are given frequently enough

to keep the bowels moving freely three or four times within the 24 hours. I feel that you have the true view of this very important subject, notwithstanding the strong critical element you have to meet."

DAVID A. STONE,
Thirty-six cases. One death. Bay City, Michigan.

"Enclosed please find answers to your questions together with the charts which I have kept of a few cases. I regret now that I have neglected to keep more of them since they would furnish material for your use, but the keeping of such under your treatment becomes monotonous owing to their likeness to each other. Since following your advice (like the Irishman, who said, when you see a head, hit it,) I treat all doubtful cases as typhoid fever, but these are not included in my report. I have never had occasion to regret having applied this aphorism."

May, 1897. L. EMERSON WHEAT,
Eighteen cases. No death. Philadelphia.

"I want to tell you about twenty-five cases of typhoid fever that I have treated since July 1st, 1895. The first thirteen were treated under the old plan, that is quinine, iodine, carbolic acid, salol, veratrum, etc. Two died from perforation of the bowels. Twelve were treated with your formula No. 1, etc., and also sponging. All made a good recovery. The majority of these were serious cases. I commenced the use of your treatment with no faith in it, but the value of it showed itself so plainly that I was bound to know what was doing the work."

SEVIER D. CLARK,
Thirteen cases. No death. Nocona, Texas.

"I have treated twenty cases with your 'abortive treatment.' I am highly pleased with my experience and wish for you great success and still greater achievement in our

profession for the good of humanity. I have never managed typhoid patients so easily and with as much confidence, in an experience of over thirty years, as I do now with your treatment always at hand."

WILLIAM M. WRIGHT,
Huntington, Tennessee.

Forty cases. No death.

"After giving your treatment a most thorough trial in twenty-one cases of typhoid fever, thirteen of which I had under treatment at one time in the same locality, it behooves me to let you know how greatly it has been appreciated by both patients and by myself.

"In November, I found the country undergoing an 'epidemic of typhoid fever. Out of the twenty-one cases there have been but two where hemorrhage gave any trouble, and in no instance was it alarming; I never stopped the treatment. I have had no fatal case. What convinces me in regard to the plan is that nearly all of these cases were amongst the 'poor white trash,' the surroundings miserable, etc. The treatment is all right and the sooner the profession gets 'on to' the fact, the better for all concerned."

CLAUDE WOLCOTT,
Canadian, Texas.

"My thirtieth case of typhoid fever within ten months, was discharged to-day, cured. It was a remarkable case all through, temperature 103 F., and all symptoms well developed. On the eleventh day the temperature reached normal. Twelfth day the patient ate some ginger-snaps, and had a hemorrhage from the bowels which continued at short intervals all day. The temperature never rose any. The patient made a rapid recovery, thus showing, of course, the entire extermination of the typhoid bacilli." *Ibid.*

Thirty cases. No death.

"I have used Dr. Woodbridge's treatment with very gratifying results."

WILLIAM T. INGRAM,
Twelve cases. No death. Murphysboro, Ill.

"To my mind the piloting of the ship of life through this dread disease, with no surer guide than anxious expectancy and with that uncertainty of knowledge as to exact conditions within the alimentary tract, seems hazardous indeed. It is clinical experience rather than theory that talks, now-a-days."

EARL BIGHAM,
No death. Grand Rapids, Michigan.

"During September and October, our little village passed through one of the worst epidemics of typhoid fever in its history. All of my patients improved under this treatment. Their charts show a steplike decline to normal temperature, which in most of them is reached in two weeks or less.

"I believe that the mortality from typhoid fever would be greatly lessened if physicians would use the Woodbridge treatment. I had excellent opportunities during this epidemic to test its efficacy, and, until something better is found, shall continue to use it in typhoid fever."

JOHN J. ORTON,
Eight cases. No death. Randolph, Ohio.

"Since 1853, I have practiced medicine, and in the many cases of typhoid fever I have attended I never felt safe till the patient was well again, but since using the Woodbridge treatment the patients get well without a bad symptom, and the disease has lost its terrors. I write, however, more particularly to suggest the use of the same treatment for dysentery, as my success with it in this disease has been phenomenal."

J. RALSTON WELLS,
Twelve cases. No death. Philadelphia, Penna.

"I have had no deaths under your treatment. I was not able to abort two cases, as I first saw them too late. Both had hemorrhage, but got well."

GEORGE A. RAMSAUR,
Seventeen cases. No death. China Grove, N. C.

"I have treated seven cases of typhoid fever by your method. The average duration of the disease was 14 days. The average duration of the treatment was nine days. I have had no deaths and on an average have instituted treatment on the fifth day."

DAVID F. MANNING,
Seven cases. No death. Marshall, Missouri.

"I enclose the clinical charts of three cases of typhoid fever which I treated by the Woodbridge method last fall. They all recovered. I intend to try this treatment again, as I believe you are on the right line and I think it is the best method we have at the present time for typhoid fever."

S. S. C. PHIPPEN,
Nine cases. No death. Owasso, Mich.

"To dismiss the subject with the statement that 'the chief merit of the 'Woodbridge treatment is its harmlessness,' as has been done by one of our most distinguished clinicians, who had never given the treatment a trial, seems to me tantamount to prohibiting one from attempting to improve upon present methods of practice. Permit me to direct attention to the rapidly growing statistics upon which the claims of Woodbridge are based. The present writer now reports twenty-one consecutive recoveries which occurred in his private practice during the last two years. Although no death occurred, the results (especially in the direction of aborting the disease),albeit, not discouraging to one who had not expected much, were much less brilliant than those reported by our friend from Ohio. Nevertheless there is

enough merit in the conception of intestinal antisepsis and drainage, to warrant one in giving it fair play. No one has a right to condemn it without proof."

WILLIAM E. QUINNE,
Twenty-one cases. No death. Chicago, Illinois.

"I am favorably impressed with your method and I will certainly make use of it again if I have a case."

MATTHEW F. RYAN,
One case. No death. Rumford Falls, Maine.

"I treated eight cases of typhoid fever with your treatment during the months of October and November, and I am pleased to say, with success. They were typical, well-developed typhoid cases, of which there could be no doubt. Four were not so well developed and there might be some doubt about them (but not to my mind), as they were all convalescing inside of ten days. They received no other medicine but the Woodbridge treatment. From my experience I firmly believe that these cases were shortened from two to three weeks."

J. R. ROGERS,
Twenty cases. No death. Louisville, Ohio.

"I have used in all my cases of typhoid fever your treatment. Dr. Stealy, my partner, has treated since we began your treatment, twenty-nine cases without a death. I have not lost any of my cases. One of them had severe hemorrhage and one of Dr. Stealy's as well, yet they recovered. I shall use your treatment until I see something that I think is more rational. Hoping in the interest of humanity that your treatment will prove all that you desire for it."

WILLIAM S. CALDWELL,
Ten cases. No death. Freeport, Illinois.

"I have had eighteen cases during this summer and fall. In none of these cases was there intestinal hemorrhage except the first, which I reported, and none died. The most of these cases were not wanting in virulency. I have charts of them and the number of days under treatment runs from fifteen to twenty-four. I find that many of my patients had the disease a week or more before coming under my care. I believe your antiseptic treatment is the rational treatment for typhoid fever. Under its use the course of the disease is greatly modified; tympanites is prevented; the tongue remains moist throughout; delirium is rare and the intestinal tract is placed in the best possible condition for the healing of the wounds. I am certainly thankful that I discovered your articles in the JOURNAL."

HARRY G. CHRITZMAN,

Eighteen cases. No death. Welsh Run, Penn.

"In both cases in which I used the Woodbridge treatment it acted like a charm and I shall certainly try it in every case of typhoid fever. My neighbor, Dr. A. C. Blincoe, has tried it in three or four cases, and is pleased with its results."

HUGH D. RODMAN,

Two cases. No death. Bardstown, Kentucky.

"Having used the Woodbridge treatment in a modified manner, for the last six months, I would say that I am pleased, nay, delighted, and I desire to know more of a treatment which is destined to revolutionize the modern treatment of typhoid fever."

JAMES COTTER,
Hickman, Nebraska.

"I could report other cases, but deem it not necessary. It has proven a valuable intestinal antiseptic, and in my practice has given entire satisfaction."

JAMES H. HALE,
Osceola, Ark.

"To the discussion of your paper at Hot Springs, a patient of mine owes today her escape from a lingering attack of typhoid fever. I had just lost one case and when another presented itself—I remembered what I had heard and at once proceeded to put her on your treatment. Temperature 103, that peculiar typhoid pulse, dry tongue, headache, gurgling in the right iliac fossa, nose-bleed, some delirium. In fact the diagnosis of typhoid fever was perfectly justifiable. On the eighth day I discharged my patient. I felt like thanking you, and in your efforts to benefit mankind, a kind word of encouragement will be pleasant at least."

ARTHUR U. WILLIAMS,
Hot Springs, Ark.

"I have today discharged another patient whom I have had under your treatment, with very happy results. I firmly believe he would have died under the old treatment. I am glad to add my testimony, even in these few cases as it may serve to cheer you up a little, when you meet with so much opposition."

Ten cases. No death. *Ibid.*

"I would say to the physician who has not given the Woodbridge method a full and fair trial, that he should do so at once. I personally believe that Woodbridge's name will go down into medical history beside the name of McDowell, Sims, Morton and the host of others who dared to become originators and reformers."

HENRY E. W. BARNES,
Three cases. No death. Creston, Iowa.

"I have used the treatment recommended by you, and the medicines prepared by Parke, Davis & Company, as advised by you, in five cases of typhoid fever, with much better results than I have ever before obtained by the orthodox

treatment and I will state that they have all run the usual course as stated by you. I am very much pleased with the results."

FREDERICK J. BRICKER,
Five cases. No death. Aurora, Nebraska.

"I have treated twenty cases with splendid success. Average duration of treatment is eight to ten days."

FRANK C. MYERS,
Thirty-five cases. No death. Kalamazoo, Mich.

"I have recently used your treatment for typhoid fever in several cases, and I am simply charmed with it. Even the limited experience I have had inclines me to believe that it will prove a blessing to mankind. With warmest congratulations."

THOMAS M. LEWIS,
Fourteen cases. No death. White Post, Va.

"Your pamphlet reads like a romance."

JAMES P. LYTLE,
Princeton, Ill.

"The palm, however, so far as records go, lies between Brand of Germany, who with his disciples treated 1,223 cases by his method, with twelve deaths, or one per cent., and Dr. John E. Woodbridge, now of Cleveland, and his followers, who record 1,200 cases with nine deaths, or three-fourths of one per cent. Brand himself treated 342 cases with one death. Dr. Woodbridge treated 400 cases without a death. Brand's treatment is without drugs, and is difficult to carry out in private practice, while in uncomplicated cases Dr. Woodbridge uses drugs without auxiliary measures. His treatment can be used under all conditions or circumstances. One of these men labored earnestly and unremittingly for over thirty years before he saw his treatment generally adopted in his own country and in but few

places outside of it. The other has for thirteen years used every honorable means to place before us his treatment so successful in his own hands, with this result: That in his report in the journal of the A. M. A. only one hundred and seventeen *physicians in this broad land were using it. Ibid.*

"I will be pleased to give your treatment a trial in the wards of the Aultman Hospital and report the results and give you credit for the same. Hoping that you have 'found it.'"

EDGAR J. MARCH,
Canton, Ohio.

"Enclosed find two charts. The first was to my mind a typical case. No. 2 was a trained nurse, who had just come from caring for a family, all of whom had typical and severe attacks. She came to Canton and asked me to give her the Woodbridge treatment, as she had nursed my first case and was pleased with the results obtained in it. I feel that you are in the right track."

Four cases. No death. *Ibid.*
Aultman Hospital, 39 cases.

"That you have struck the correct treatment, I am further convinced, not only by your own brilliant success, but by the very remarkable run of the course of the disease in four cases which I treated in September, following your directions as nearly as possible. No one with intelligence, it would seem to me, would question the excellence of the treatment, after having tried it, especially with such testimonials as you have presented from those who cannot possibly be interested in *your* success. In all earnestness and without intending gross flattery, I here predict, that in the near future the name of John Eliot Woodbridge will be classed with that of Jenner and Pasteur, Sims, McDowell, and Battie of Rome, Ga., as benefactors of mankind, and it behooves every young physician of America

to step forward and 'render unto Caesar that which is Caesar's,' *i. e.*, to render due homage and give credit unto the man who has demonstrated his ability to solve the greatest problem of therapeutics,—that of the treatment of typhoid fever successfully. You, I fear, will have to appeal to the younger physicians of America to thoroughly test your treatment. I was *interne* in the Memphis City Hospital nearly two years, and had a large opportunity of treating typhoid fever with * * * but although it seemingly modified the disease I have no recollection of one case being cut short. I have been in private practice for five years and can't say that I have had any better results than in hospital practice. In these cases, after two or three days of treatment, the fever could be and was controlled by the antiseptics administered. I feel, with further experience, that I can have as good results as you have had. These few cases which I present (few in number, but brilliant in results), convince me that you have struck the keynote. I must return thanks for the great benefit I have seen result from its use. I remain, yours sincerely,"

WILLIAM BAYARD SHIELDS,
Saint Francis, Arkansas.

"I have notes of twenty-eight cases treated. One case had such a high temperature and recovered so quickly, that if he had not been covered with rose-spots I should have decided that I had made a mistake in diagnosis. The case that died was neglected—did not have proper nursing.

Thirty-four cases. Two deaths. *Ibid.*

"I have been using it of late in four cases and am getting splendid results."

HOWARD M. FENTON,
Four cases. No death. Welshfield, Ohio.

"Enclosed find chart of temperature in our case of typhoid. I discharged her yesterday, going around the house

as if she had not been sick—she was a little pale. She had had whooping cough; she did not get low at all but would pick a banjo and sing a little song, in fact she was just comfortably sick all through and had no delirium or tympanites after the first week. I will try the method again."

GEO. O. FRASIER,

Thirteen cases. One death. Cleveland, Ohio.

"I have one case of typhoid of about eight days duration and one just beginning (probably), and shall try the treatment."

SPENCER M. FREE,
Du Bois, Penna.

"I am treating four cases at present. I want to give the treatment a fair and a thorough trial. I have followed the directions you have given and shall hope to see good results. We have had a good deal of typhoid, much of it is severe."

Ibid.

"I have used your plan of treatment in a few cases and I am much pleased with it. It is the best treatment that I have employed. I shall prepare a paper for presentation to our West Branch Medical Society. I feel sure that the more men who can be induced to use the treatment the less will be the mortality in typhoid fever."

Ten cases. One death. *Ibid.*

"I must confess that I had not enough confidence in the antiseptic treatment to give it a test sooner, but I am convinced now that had I instituted it in the beginning of my first case, I could have shortened it ten days. I am aware that these few cases can be of no real benefit to you in making up your report, but they are sufficient to convince me that the treatment is of inestimable value to humanity."

S. P. SNYDER,

Three cases. One death. New Bedford, Ohio.

"I have treated fifteen cases with an average duration of twelve days after beginning treatment. I have lost two cases, both by perforation, one the second day after seeing him first, although it was the tenth day of sickness, the other a fat German, weighing 300 pounds—a brewer. I no longer dread typhoid fever, but find that I can rely on bringing the temperature to normal in 12 days if I can get from three to five stools a day—can give plenty of medicine and can make my patient take nothing but egg, malted milk, and meat soups for nourishment. All physicians of this place are using your treatment—they speak well of it. At Ashland, Wisconsin, and at Alexandria, Indiana, I have personal knowledge that it is used with success. Feeling very grateful to you for your persistance in bringing this repeatedly before the profession, even when persecuted by unbelievers."

FRANK A. SOUTHWICK,

Fifteen cases. Two deaths. Stevens Point, Wisconsin.

"In my use of your treatment of typhoid fever I will say I have had in my own practice 30 cases and I have instituted it in many other cases where I was called in consultation. I am greatly impressed with the treatment and use nothing else. It has given me better results than any other. I carry out the plan to the letter."

JEREMIAH H. STEALY,

Thirty-eight cases. One death. Freeport, Illinois.

"I have used your treatment in a much larger number of cases than the fifteen reported, but not exclusively. I have derived much comfort and profitable instruction from your book, for which I am truly grateful. The principle of your treatment is right in my opinion and time will prove it. May you live to enjoy your honor is my wish."

WILLIAM S. ALLEE,

Fifteen cases. One death. May 1897, Olean, Missouri.

"The Woodbridge treatment has long since passed the experimental stage and is being used sucessfully by hundreds of physicians in the United States and, no doubt, by as many others in foreign countries. The time is coming, very soon, when the physician losing a case of uncomplicated typhoid fever will have his knowledge and skill questioned, and justly so; hence it behooves every practitioner to use the *best* treatment. The Woodbridge treatment appeals to the thoughtful as rational and scientific, because it not only destroys, but removes the cause of the disease; it combines the antiseptic and eliminative methods. It is also more or less systemic in its effect, as some of the ingredients of the prescriptions are eliminated by other organs, as well as by the intestinal canal. The alimentary canal is quite accessible for purposes of treatment; it may be almost completely sterilized by the proper use of antiseptic medicines, combined with proper elimination. This treatment acts first, by gradually producing an intestinal antiseptic effect; second, by carrying away the toxic and infecting material—its eliminative effect; and lastly, by its permanent septic and local effect, keeping the intestinal canal in a constant and continuous aseptic condition, until every vestige of the disease producing germs is thoroughly eliminated. Reinfection is prevented by the active condition of the bowels; the temperature is lowered; the appetite restored, and the improvement continues until often the patient is led to remark that he no longer feels sick. If the disease has passed to the stage of ulceration, the treatment is just as rational, though the abortive effect is not so prompt. I first used this method in August, 1894, since which time I have treated a number of cases. With this treatment it is rarely necessary to give medicines to reduce the temperature, as it usually commences to decline as soon as the remedies have taken effect, and free catharsis results. When the treatment is commenced early, the patient need not go to bed, nor be restricted in diet nor in

social enjoyment, and sometimes he need not neglect his business. When we consider that an unjust condemnation of this treatment may make us responsible for the death of many people, let us weigh our opinions carefully before expressing them to others whom they might mislead. My results have been all that I could wish for, and I am, by this evidence, forced to the conclusion that 'death is a wholly unnecessary consequence of typhoid fever' and that every case in which proper treatment is instituted sufficiently early in the course of the disease, can be aborted."

"I have treated ten cases; average duration of disease, ten days and have had no deaths. (Passive treatment lasted two days.)"

WALTER N. SHERMAN,
Merced, California.

Fifteen cases. No death.

"I have given your great discovery a good trial in 28 cases of well defined typhoid fever. All made quick recoveries in an average of eighteen days. Have used it in six cases of dysentery and four cases of enteritis. I take No. 2 tablets myself for flatulent dyspepsia and find them the best remedies I have ever used. I did not keep clinical charts. The cases were all well marked—diarrhœa, rose-colored spots, and the nervous symptoms were pronounced. In most of the cases the fever was well on to the second week before treatment was commenced."

"Typhoid fever 28 cases, dysentery 6 cases, enteritis 4 cases, dyspepsia 1 case."

Second report, one hundred cases.

ASA F. PATTEE,
Boston, Mass.

No death.

"Both my partner, Dr. Southard, and myself are very favorably impressed with the treatment. A few cases were

treated of which we have no charts,—the others we enclose. We have had no deaths with this treatment."

JOHN E. WOOD,
Eight cases. No death. Marysville, Ohio.

"There is an epidemic of typhoid fever in this locality, and I am very desirous of giving your treatment a trial and will consider it a favor if you will give me some assistance." THOMAS W. WILLIAMS,
Casey, Illinois.

"I have treated sixty cases by your method and not a single death. Average duration fifteen days."
Sixty cases. No death. *Ibid.*

"I regret that I have not complete histories of the eighteen cases of typhoid fever which I treated last fall by the 'Woodbridge method,' but I assure you I have strong mental convictions as regards the great benefit the patients derive from your method of treatment."

JOSEPH B. WALKER,
Eighteen cases. No death. Effingham, Illinois.

"I write to congratulate you upon the success of your persistent efforts to call the attention of the profession (to anything new) to your treatment of typhoid fever.

I have been calling the attention of the physicians about here to it, and you have now many disciples in the western part of Iowa. At Glidden, just east of us, many cases have been treated successfully on the plan suggested by you. At Lake City, I have called the attention of the profession to the plan and at the present time many cases are being treated accordingly. I have held for a long time that death from typhoid fever ought to be as rare as death from infection of a wound in the hands of a skilled surgeon. I cannot help expressing my appreciation of your efforts."

ARTHUR L. WRIGHT,
Carroll, Iowa.

"I have treated forty case of typhoid fever since I wrote to you. There was a marked shortening of the course of the disease, and I think if the case is seen early the disease can be aborted. Have had one death. The treatment in this case was instituted in the third week. The case was a man of sixty-seven years, and in poor general health. He recovered from the fever but died about two months afterwards from general debility, having no appetite for food of any kind. I use your treatment exclusively."

R. F. ROBINSON,
Forty cases. One death. Hallsville, O.

"I wish to write you in praise of your abortive treatment of typhoid fever. For four months this city and its vicinity has been visited by an epidemic of typhoid fever. I have used your remedies in two hundred and three (203) cases to date, with two deaths. One of these refused to take Formula No. 3 for ten days before death. The other fatal case —a Finlander girl, in a moment of delirium, escaped into a rainstorm and pneumonia supervened. Of the 203 cases, 149 were aborted—i. e. went about their usual duties in ten days from taking to bed. Only twelve of these cases had febrile symptoms after the twelfth day. Your method is of great value to the entire world and I don't propose to leave future generations alone to admit it, but gladly do so now."

NEWTON M. WADE,
Lead, South Dakota.

Two hundred and thirty-seven cases. Two deaths.
"I have used your remedies in one case with good results."

A. E. WALKER,
One case. No death. Argonia, Kansas.

"I have treated five typical cases of typhoid fever and also five others, with influenza complication which by your method. My observations and deductions favor your principle of treatment." ALEXANDER M. VAIL,
Rock Rapids, Iowa.

Five cases typhoid fever, five cases typhoid fever with influenza: ten cases. No death.

"I have treated thirty cases of typhoid fever—the average has been about nine days of treatment. In other instances when I had any doubt as to the diagnosis, I always gave the patient the benefit of it and placed them upon the Woodbridge treatment without modification. Doctor, your treatment *will abort* typhoid fever and it is the *proper* treatment at any stage of the disease."

CHARLES M. VERTRIES,

Thirty cases. No death. Murrayville, Illinois.

"I have been using your treatment of typhoid fever for four months, during which time I have had an unexpeeted degree of success with it, having lost but one out of thirteen cases. The one I lost was in its 23d or 24th day of fever when I was called in and it then was too late to save it by any treatment—the patient dying two days after I saw him."

R. C. Van Dorn.

Thirteen cases. One death. Cumpos, Sonora, Mexico.

"I have treated by your method forty cases of typhoid fever without a single death, some of them being of the severest type. Average duration of illness about two weeks. In the future I shall continue to use your treatment as long as I have the same results as I have had in the past."

DEWITT C. WILSON,

Forty cases. No death. Ironton, Ohio.

"I have treated six cases of genuine typhoid fever. The average duration was eighteen days. I have had one death from (hemorrhage of the bowels), in which I did not use your treatment until the ninth or tenth day of disease."

GEO. W. WESTLAKE,

Twelve cases. One death. Red Bluff, Cal.

"I send you by this mail, charts of cases that were *unmistakably typhoid fever*. Some of them were the last cases where there had been from four to six patients in a family. We are well pleased with the results we have had and can positively say that it is due to the treatment. Hoping that the profession may throw off their prejudice and give you due honor and respect."

THOMAS F. REED,
Thirty cases. No death. Massillon, Ohio.

"I send you the chart of Irene W., whom you so kindly went with me to see and put on the Woodbridge treatment. You will remember that this patient was a little girl of twelve years with unmistakable symptoms of typhoid fever. When you first saw her she had been sick eight days and her temperature was 103.2. By your instruction I put her on the regular treatment which you originated and I must admit that I was greatly pleased with the results obtained. While, as you suggested, it was too late to *abort* the disease, she never had a bad symptom after commencing your treatment. The headache, tympanites, restlessness, insomnia, etc., left her within two days. While the fever did not leave her entirely for two weeks from the time of the commencement of the treatment, she had only a feeling of well being, her appetite was good, she slept normally and expressed a desire to get up, as she felt almost as well as ever. It is needless for me to say that I am very much pleased with your treatment and shall certainly continue to use it. Permit me to express my thanks to you for the kindly interest you took in this case."

WILLIAM H. HERRICK,
Three cases. No death. Cleveland, Ohio.

"I have treated a number of cases this summer by your method of treatment with remarkable success. I presented these cases and the method of treatment before our Jeffer-

son County Medical Society at our last meeting and introduced it previously, orally in the Society, and also to individual physicians. Dr. S. M. Free of Du Bois, Pa., is very enthusiastic recently, also Dr. J. J. Brewer of Clarington Pa., who treated a number of cases at my suggestion."

ABRAHAM F. BALMER,

Eight cases. No death. Brookfield, Penna.

"Suffice to say "The Abortive Treatment of Typhoid Fever" is a *matter of fact*, I am convinced, *having tested* it in my practice, *thoroughly*, and *too much cannot be said in its praise*. In typhoid fever, the treatment of Dr. Woodbridge *is without parallel*."

JULIAN E. SAWYER,

No death. Mobile, Alabama.

"I have tried your treatment for typhoid fever but have sometimes used some other remedies in connection with it, I have been able to abort some cases that I have diagnosed as typhoid fever. I have never had a hemorrhage from the bowels since I began using the medicine—have had one death, but it was during the third relapse and the party's own fault, in short I believe the treatment is all right. I shall continue using the remedies."

R. E. SERVIER,

Twenty-five cases. Three deaths. Liberty, Missouri.

"I am much interested in the treatment, having used it in seventeen cases, all with excellent results, not having lost a single case and not having a serious symptom after I get them well under the treatment. My cases run a course of from ten to fifteen days. They are usually aborted, leaving the patient free from shock and long tedious convalescence, which always followed under the old treatment. Hoping every physician will give the Woodbridge treatment a trial." JOHN H. SPENCER,

Seventeen cases. No death. Murrayville, Illinois.

"Your letter found me with a case of typhoid fever in my own son, a boy of ten, who had but recently recovered from a two months attack of chorea, and who had not regained his flesh and strength and so was in bad shape to begin with. I enclose a chart, showing the temperature range, which is almost a typical one. Looking back over the case now I think I made the mistake of not pushing the calomel and podophyllin sufficiently. During the second week his condition was ugly and discouraging, but after beginning the tablets there was rapid improvement in his general condition, as well as lowering of the temperature. He is now convalescing rapidly and I feel that I owe his life to the treatment which you have introduced. Doctor, I believe the world will, in time, accord to you the honor of making us masters of typhoid fever, and I feel I owe you personally, a debt of gratitude for having been able to save my own child's life."

CHARLES C. STOCKARD,,
Eighteen cases. No death. Atlanta, Georgia.

"I have treated eighteen cases of typhoid fever by the Woodbridge method. The average duration of fifteen cases was thirteen days. There were two deaths. My first case was a man brought from Chicago, who had been sick two weeks. He came to my office with a temperature of 104½, had lung complication and hemorrhage of the bowels. He was sick twelve weeks (recovered.) Four others of this family came down with the fever. The Woodbridge method aborted the disease and in eleven days they were convalescent. My sixth case was a man who had been very sick two weeks and who died in four days after the treatment was commenced—had perforation of the bowels and died in collapse. The other fatal case was a girl of eighteen years who had been sick two weeks before I was called. She would have recovered if she had had care.

I am very much pleased. I think the *Woodbridge treatment is the treatment.* Give me a case in the first week and I will show the worst skeptic that the Woodbridge treatment will abort typhoid fever." JOHN I. SMITH,

Eighteen cases. Two deaths. Shannon, Illinois.

"In treating these cases I did not average a visit a day. Your treatment has given me the best results and in the shortest length of time, of any I have yet pursued."

ROLAND J. STIVERS,

Six cases. No death. Lena, Illinois.

"I treated in all seventeen cases last fall and one in January this year, with no deaths. Average treatment was about fifteen days. In one case,(a brother, who lived in a distant town), I was called about the 12th day of the disease. Found him with a rapid pulse, delirious, high temperature. Put him on the Woodbridge treatment; after the fifth day the indications were more hopeful. From this time the patient gradually improved and finally recovered. This was a serious case from the beginning as the patient was sixty years of age. I am well pleased with the treatment as some of these cases were very severe."

CLAIBORNE C. STIVERS,

Thirty-six cases. One death. Horton, Kansas.

"I am much interested in your work. We have a great amount of typhoid fever in our locality. Last autumn and winter I personally treated 40 cases with your remedies and with astonishing results. It is the 'up to date' treatment."

FREDERICK A. SWARTWOOD,

Forty cases. No death. Waseca, Minnesota.

"Having many difficulties to surmount in applying your treatment during this past summer, I am not yet satisfied and cannot fully or conscientiously agree with you that this

treatment will *abort* typhoid fever, but I would like to add that in the cases where I have used it, that it has certainly *done better work* than anything we have ever used."

BENJAMIN MOSBY SMITH,

Thirty-seven cases. No death. Davis, W. Virginia.

"I have treated sixteen cases of typhoid fever—at least six of which were diagnosed as typhoid by other physicians and all were so reported to the Board of Health, every one of which made rapid recoveries in from ten days to three weeks. So far I have lost no case and the treatment has materially iessened the duration of the disease."

W. BLAIR STEWART,

Sixteen cases. No death. Atlantic City, N. J.

"I have had ten cases, all of which have been aborted in from eight to fourteen days. I have the temperature charts and histories of three cases. I fully endorse your treatment and under its judicious use I do not expect to lose any patients. The treatment has not been generally used in this section, but I do not think there has been a single death or serious complication in any case where it has been used. I regard it as a *great boon* to our fellowmen and believe the time is not far distant when it will be universally used, perhaps with some modifications."

JOSEPH A. CROOK,

Thirty-two cases. Two deaths. Jackson, Tenn.

"Allow me to thank you very sincerely for the great benefit you have bestowed upon me and my patients in giving me the specific treatment for typhoid fever. I happen to have a case now on hand in which I have begun the treatment." *Ibid.*

Eight cases. No death.

"There were no grave sequelæ in the cases which recovered—all of them soon enjoying splendid health."

PETER STUWART,

Seven cases. One death. Hadley, Michigan.

"I gladly furnish these statistics and have every confidence in the method."

GEORGE E. ALLEN,

Thirty-seven cases. One death. Youngstown, Ohio.

"Though in these cases I did not obtain as good results as you have done, still (excepting the first case), the fever did not last half as long, on an average, as under former treatment. Last fall I furnished Drs. A. B. Lathrop of Swanton, and Parker of Delta, with sufficient of your tablets and capsules to treat one patient each. They reported that the fever was controlled in about fourteen days."

W. A. SCOTT,

Seven cases. One death. Swanton, Ohio.

"I have treated six cases by your method of treatment without a death. The fever aborted in from ten to twelve days. The cases were all treated early except one."

CHARLES T. BENNER,

Tiffin, Ohio.

Twenty-three cases. Two deaths. Eleven days.

"I have been using the abortive treatment of typhoid fever advised by you and with what I consider good results. I have treated eighteen cases since I commenced using it, with one fatal case, and that was not wholly in my control. Shall still continue to use this method when typhoid presents itself."

DAVID C. HARMISON,

Eighteen cases. One death. Bath, Illinois.

"I followed closely your articles in the Journal of The American Medical Association and, during the last summer, I have tried your treatment of typhoid fever. I also had some of my friends use it. I have a record of over sixty-five cases treated during the fall months, without a single loss. I desire to thank you for what you have done for the profession." JOHN W. FELTY,

Sixty-five cases. No death. Abeline, Kansas.

"I have been using this method for more than three years, during which time I have treated ten cases of unmistakable typhoid—in my own practice without a death. I saw two cases in consultation, after the third week of the disease, both of which died, but in no case where I saw the patient before the second week have I had a death and in all the disease was aborted before the fifteenth day." ELIJAH J. MORGAN,

Decatur, Illinois.

Case No. 1—"Severe form of typhoid, first seen by me about the tenth or twelfth day. Put him immediately on No. 1, and he was progressing finely, when on the 16th day, acute lobar pneumonia developed and the patient died in thirty-six hours. This patient had poor care—was in an old tumbledown log house and his surroundings were unfavorable. Case No. 4—Female, age 23 years, was first seen by me about the tenth day. She came from Duluth where typhoid was epidemic. She had three intestinal hemorrhages and was quite sick. I enclose a copy of her chart. Her temperature touched normal in seven days and remained so. I believe that your method offers more in treating typhoid fever than any other and I have been well satisfied with it, in my limited experience, and shall continue to use it as occasion offers."

WILLIAM S. SMITH,

Fourteen cases. Two deaths. St. Clair, Minn.

"I am fully satisfied that your treatment is *the* treatment for typhoid fever and I am confident that the world will ever remember you as its benefactor."

J. G. STEINER,
Knoxdale, Penna.

"I have succeeded with your former method so remarkably that I am loath to change. If you have found that this modified method gives better results I will gratefully adopt it." *Ibid.*

"I am very much impressed with the many advantages it has over any method that has come within my knowledge. I at first thought your claims for it were entireiy too extravagant and they could not stand the test when practically made. I no longer doubt the efficacy of your treatment when judiciously administered. The rationality of the treatment is in keeping with the results."

JOHN DEBO,
Five cases. No death. Texas, Kentucky.

"During the epidemic in this city in 1892, I lost months of valuable time and nearly lost my life from the dread disease, hence you need not ask me why I am interested in anything that will abort it."

ROBERT C. BEATTIE,
Fifteen cases. No death. Pittsburgh, Penna.

"Your plan is a great improvement on the old style of doing. I have not had one death since I began it. I have had some cases that seemed very unpromising, but all came through in good shape. I have had cases enough to test the treatment thoroughly and thank you for bringing it to my notice." *Ibid.*

"It gives me great pleasure to answer in the highest praise of the abortive treatment of typhoid fever. Before using it I took charge of a case with apprehension and

dread, now it is with pleasure. I assure my patients a speedy and safe recovery. I treated twelve cases of undisputed typhoid fever, about the same number of typhoid malarial fever, four cases of malignant malarial congestion and one case of membranous croup, and in every instance successfully. In all but one or two tymanites was slightly developed; I had no hemorrhage at all. I would as soon think of treating malaria without quinine as to treat typhoid fever without *this* treatment. In fact I regard it as more certain than quinine for malaria. It is superb."

"It takes from the physician that all-absorbing care and anxiety for the patient, that formerly was his, while using the old-time methods of treatment. Last fall in this locality, pernicious malaria was more common than I have ever seen it before and typhoid fever was very plentiful; but thanks to the Woodbridge treatment, I did not lose a patient from either disease. Typhoid fever usually ran its course in from ten to fourteen days."

BERRY BOWEN,
Thirty-one cases. One death. Dukedom, Tenn.

Gentlemen: You have heard the strongest passages of every adverse criticism of the "abortive treatment of typhoid fever" of which I have any knowledge—whether spoken in debate, published in medical journals, or written to me in personal letters, by any physician who has used or has pretended to use it. You have heard also a few brief excerpts from a very few of the many hundreds of highly commendatory reports in my possession.

The method which I have advised for the treatment of typhoid fever is founded upon the theory that all of the diseases in which it is truly applicable are caused or at least accompanied by, a germ whose toxins are dangerous or injurious to man, and it is dependent for its results upon the great principle of antisepsis which has made modern surgery possible. In theory it is rational and scientific and

these reports show that in practice it will bear the most crucial tests.

These reports deal with 5,449 cases, 105 of which ended fatally. (One other patient died one month after having been discharged convalescent, from tuberculosis; another two months after discharge from debility; and another six weeks after, from pre-existing bowel trouble). This is a death rate of less than two per cent.

It is unfortunate for the abortive treatment of typhoid fever that those who use it soon acquire a reputation which results in their being called to see a large number of cases after less skillful practitioners have exhausted their resources and after fatal complications or sequelæ have supervened. Therefore, there are included in these statistics a large number of deaths that should by rights be excluded.

Thus of the 105 deaths, nine died within forty-eight hours after the physician who instituted the treatment was called. In many instances the physician first saw the patient after the appearance of intestinal hemorrhage or other alarming conditions.

Several deaths are known to have occurred in cases in which the physician, after having treated the patient for days or weeks by some other method, had realized that a fatal termination was imminent and who then adopted, this method, or some part of it, as a *dernier resort.*

As a large number of reports have been received since this paper was read, the statistics are corrected up to date and now stand as follows:

Number of cases treated, 9,177; number of deaths, 173. This is a death rate of 1.88 per cent. The average duration of illness in 5,543 cases which recovered, is 12.7 days this (being all the cases in which it is given). Of the cases that recovered forty-two were complicated with pneumonia, 105 had intestinal hemorrhage, thirty-seven were pregnant women, four of whom miscarried and recovered and two died. Of these 9,177 cases 9,004 recovered, and of

these latter, clinical charts or temperature records of 558 cases have been submitted, of these 513 had a temperature of 103 or above; and 358 of 104 or above; 146 of 105 or above; and 18 of 106 or above; during the first week of treatment. 368 of these cases had a temperature of 103 or above; 250 of 104 or above; 100 of 105 or above; and twelve of 106 or above, when they came under the care of the physician who instituted this treatment and reported the cases.

Of all the cases which had extremely high temperatures, 105 or above, during the first week of treatment and recovered, the duration of illness is given in 87, the average being 13 and 4-7 days, and this includes several cases in which the duration was prolonged by grave complications.

If these are representative cases, the gravity of the lesions and excessively high temperatures during the first week indicate that either the epidemics or outbreaks of typhoid fever in which they occurred were of unusual severity or that the observers have had more than their share of "bad cases."

Contrast these results with the statistics that have been given by the best authorities, viz.: fifteen to seventeen per cent. of deaths. (During our civil war, there ccurred 34,-543 deaths out of 148,760 cases of typhoid, typho-malarial, and common continued fevers, a death rate of 23.22 per cent.) and an average duration of forty-two days illness, three per cent. of relapses and sixty to eighty per cent. of miscarriages among pregnant women.

It may be argued (and with apparent justice), that an average duration of twelve and seven-tenths days of illness and a death rate of one and eighty-eight one-hundreths per cent. from typhoid fever under this treatment is not a complete fulfilment of the promises that have been made for it, but it should be observed that a large majority of all of the deaths of which full data are given, were in cases in which the treatment was instituted late in the course of the dis-

ease, in those in which complications were present when it was instituted or in which it was not properly carried out. In only thirteen of the 173 deaths in which the reports seem to show that proper treatment was instituted during the first week of the disease, has death resulted. It should be remembered that the opinion that death or protracted illness are unnecessary consequences of the disease is based on the hypothesis that there is an early stage of typhoid fever in which, if proper treatment be properly applied, it may always be aborted. *The value of abortive treatment* should be measured not by the statistics of the cases treated at all stages of the disease, by all kinds of modifications of the method, but by the results obtainable by its careful and scientific application at the earliest possible moment of the attack.

DISCUSSION.

DR. JOHN MCCURDY, Youngstown, O.—I will take the time of the Society just a minute. I will say that perhaps I was one of the first to accept Dr. Woodbridge's treatment of typhoid fever. I think I know something of the disease, having had it myself and having practiced four years in the army. I did not like the treatment when I first tried it. I will say that I now consider it better than any other single treatment I have used, but I cannot go so far as Dr. Woodbridge and say I do not lose patients. I have lost some patients and I expect to lose others. I have modified the treatment somewhat on account of the exigencies that came up. This discovery has friends and enemies. Many laugh at the treatment because they have not given it a trial, and many because they would condemn anything new. But there is not an intelligent practitioner in this room who does not treat typhoid fever on the general plan that Dr. Woodbridge has suggested. Very few perhaps use his exact prescription, but most of you use a modified form of it, as I do. Therefore, I say the doctor has put us on a plan of treating typhoid fever which was not well established before. There are a great many who claim to have discovered America, but sensible and

honest people say Columbus discovered America; and so while we do not accept *in toto* Dr. Woodbridge's plan, we do say he was the first to positively carry out this treatment. Therefore. I believe Dr. Woodbridge deserves a great deal of credit, for pointing out and persisting in the plan he now expounds.

Remarks by DR. JENNER, Dayton, O.—I would like to add my testimony to that of the gentleman who just preceded me. Although I do not follow Dr. Woodbridge's treatment just as laid down by him, I acknowledge that I follow the idea he has given, and I must bear testimony that it has had in my hands, (although I have not had as large experience as most of you), wonderful results. I have not only cured typhoid fever, but I can testify that I have *aborted* typhoid fever.

DR. L. B. TUCKERMAN, Cleveland.—I do not desire to criticize Dr. Woodbridge's treatment, but my impression is that under any treatment of typhoid fever there will be occasional deaths. We think we have a pretty good record in St. Alexis Hospital. Of the almost 300 cases we have had there in the last three years, largely brought in in the third week of the disease, many moribund when brought there and some dying soon after being brought in, we have lost only 13 cases. We use calomel, when it is indicated, and other intestinal antiseptics. But, gentlemen, there is more to typhoid fever than antisepsis of the intestine. Three cases of typhoid fever have been examined in this city in the last three years, in which the typhoid bacillus has been found in the meninges of the brain, and no intestinal antisepsis is going to remove bacilli from the meninges of the brain. Those bacilli were in the meninges of the brain in the earlier stage of the disease, as shown by the clinical symptoms. Then there is a case reported here in the Cleveland Medical Gazette, in which there were circulating in the blood streptococci and the typhoid bacillus. Intestinal antisepsis will not reach them. That is not saying intestinal antisepsis is not the proper thing, for it is the proper thing, but not the whole thing, even with it you will lose patients. In the majority of cases, by the time the patient is fairly sick, the baccilli are well beyond the intestine.

Remarks by DR. CHARLES S. CHAMBERLIN, Kinsman. —I suppose it is generally accepted that typhoid fever cannot be aborted, yet I wish to state one case briefly. The patient was a woman of about thirty-six years her surroundings were extremely unsanitary. She lived in a hovel on the edge of a quite abrupt hill, and from the rear door there were steps that descended several feet, and at the foot of the stair there was a spring, the basin of which was about 5 feet in diameter and 3 feet deep and filled with water. The case occurred in the fall when the water was ice cold. At about 11:00 o'clock the case was seen by her attendants for the last time that night, and in the morning it was discovered she was missing. After sometime she was found lying at the foot of these steps. It was several years ago and I have not the exact data, but I think it was about the tenth day. I do not think there could have been a mistake in the diagnosis. The temperature had been ranging high. She had, while delirious, found her way out of the house and fallen down the steps into this spring. She finally managed to scramble out of it, and when she was found at 7 o'clock the next morning she seemed to be moribund. It took a long time and persistent effort before any appearance of life could be restored. And yet that patient was well within one week. There was no more fever from that time. It was the end of the disease.

Remarks by DR. C. F. HOOVER, Cleveland.—In view of the remarks and the possibility of aborting typhoid fever, I think there has been a strong effort to twist the diagnosis to fit the pill. I do not think any practitioner feels so helpless as when trying to differentiate between typhoid fever and miliary tuberculosis and several; other fevers, probably intestinal in origin. The other argument to lift the so-called "Woodbridge treatment" out of the realm of empiricism and place it on a scientific basis is the statement that its value is that of intestinal antisepsis. I do not think there is much evidence in favor of this. It has been demonstrated to be impossible to diminish the number or modify the bacilli in the intestinal tract by any of the intestinal antiseptics. Until the author can place the diagnosis of typhoid fever on a more positive basis, the right to place many of the so-called aborted cases under the head of typhoid must remain in question. Many such

cases with doubtful diagnosis have been cured, with sugar of milk at the City Hospital.

Remarks by DR. R. H. MONTGOMERY, Youngstown: I want to thank the Dr. for the manner in which he has stood by this work and contributed a good part of his life to it. Unfortunately, he left Youngstown before he converted all of us and we feel rather hard towards him on that account. Perhaps he thought he would come to where the physicians were broader minded and would take up his method of treatment more quickly. About ten years ago, the Dr. was called in consultation with me and he told me of his treatment of typhoid fever. I afterwards used it in typhoid fever until I found I was not using his treatment, for he had changed it so materially. I found I could not keep track of the Dr's. treatment, he changed it so often. I am still willing to be convinced of this matter. Last fall I thought I was going to be convinced of the efficacy of the Woodbridge treatment. Dr. Woodbridge, when he left Youngstown, left a physician there in whom he delegated his power to cure typhoid fever. I had two cases and this man, who uses the Woodbridge treatment, was called to a case just between these. There were three houses in a row. They all got their drinking water from the same source and they were all taken sick about the same time, within 48 hours of each other. I used the sulpho-carbolate of zinc and the other man used the "Woodbridge treatment" and told the patient in ten days he would be cured. I thought here was a chance and if that man was cured in ten days and my cases were not, I would be convinced of the efficacy of the "Woodbridge treatment." On the tenth day he was told to get up and eat anything he pleased, and on the eleventh day he was told to go back to bed. Finally, on the same day these patients all got out and visited each other.

I had an opportunity, also, to watch some of the same physician's cases in the hospital. Some of my cases that came in after his cases, went home before his did, although my cases were only treated with the sulpho-carbolate of zinc. I am still willing to be convinced, but we would like to see something at home. I don't care anything about cases out at Oil city. It seems strange we cannot get hold of any of these cases.

DR. R. C. FAUSETT—I am also from Mahoning county, and I wish to refer to a case reported by Dr. Woodbridge, with which I was connected. I had a case of suspected typhoid fever and through some friends of the patient, Dr. Woodbridge was sent out to confer with me. The patient was about 35 years of age and had been taken suddenly ill, while working in the field, with pain in his side and the evidences of pneumonia. As two or three days elapsed and the condition was not very good, it was thought possibly he had typhoid fever. When Dr. Woodbridge saw the case he agreed perfectly with me in regard to the impossibility of making a diagnosis at the time. The evidences were not yet plain. He asked me if I would not have him called out if it proved to be typhoid fever. I asked him his remedy and he said it was a secret, one that he did not wish to disclose until he could lay it before the American Medical Association. I said to Dr. Woodbridge, certainly you would not ask me as a reputable physician to give remedies that are secret, unless you can bring abundant clinical evidence to support them. But I could not get any idea as to his remedies. I told him I would lay the matter before the family and it would be within their province to call him if they chose. But the family did not choose to call the doctor. I had Dr. C. C. Booth, from Youngstown, in consultation, and the patient was doing very nicely under ordinary treatment for typhoid fever. In about two weeks his temperature was normal and so continued for several days. With all the disturbances subsiding, except in his lungs. Through the fault of some of his attendants he was allowed to get up on a cool morning, took cold, and died within 48 hours from a recurrence of the pneumonia. I only bring this forward as one of the cases in which he should have been called and the patient might have been saved. (Applause.) That is the only patient, fortunately, that I have attended who died from what might have been called typhoid fever. But I believe in part of Dr. Woodbridge's treatment. I have used the carbonate of guiacol for three years with a good deal of success as an intestinal antiseptic, given in doses of five to ten grains every two or three hours, and I believe that *this* antiseptic is the main factor of whatever success has attended the so-called Woodbridge treatment. Given *alone*, in sufficient quantity, I believe it will accomplish all

that antisepsis can do, is readily taken by the patient and is rarely disturbing to the stomach.

The discussion was closed by Dr. J. E. Woodbridge. I know a number of physicians in Youngstown are using the treatment I advise and are having success with it. I know they are having better success than can be secured with the sulphocarbonate of zinc, although it is an intestinal antiseptic, or with any other known method of treatment.

In answer to the gentlemen's remarks about the serum diagnosis of typhoid fever, I would like to say he is not in accord with the best thought of the profession; and if he were, if miliary tuberculosis or pernicious anæmia cannot be differentiated from typhoid, that is no evidence of the lack of positive value of the test in cases of aborted typhoid fever or of its negative value in cases that die of other diseases under an erroneous diagnosis of typhoid and in which an autopsy is not possible.

I want to say that those who have followed most closely my instructions contained in "Typhoid Fever and Its Abortive Treatment" have had the best results.

In answer to Dr. Faucett's remarks, I would like to say he does not state facts exactly. I was called by the *relatives* to see the patient. I said I would like to treat every case of typhoid fever I could and did not like to let a single case slip through my fingers.

CHAPTER VI.

INSANITY.

BY

J. S. COMBS, M. D., OWENSVILLE, OHIO.

Insanity has increased in the United States during the past thirty years with great rapidity.

We now have in round numbers one hundred and six thousand, of which seventy-one thousand are in asylums.

The increase has been much greater in proportion than the immense increase in population.

Dr. Forbes Winslow reports that he examined ten thousand cases reported by various authors, to ascertain if there was physical disease as the basis of the trouble, and failed to find any.

Prof. Robert Jameson says: "I repeat that insanity is not, strictly speaking, either a bodily or mental disease; that it is a disturbed reciprocal relation of mind and body."

Carpenter, the distinguished physiologist and psychologist, says: "The doctrine regarded as having the best scriptural basis that the mind has an existence altogether distinct from that of the body, is attended with several difficulties, of which those phenomena of insanity are the most important.

"On the other hand, the opinion that mental phenomena are the result of material changes appears to involve difficulties at least as great; among which may be noticed the continuousness of personal identity preserved throughout the continued and rapid changes to which the nervous system is subject."

This is a question which scarcely comes within the boundaries of human knowledge.

Sir Benjamin Brodie says: "I am aware that mental derangements may, in many cases, be traced to *moral causes* as its original source, and far be it from me to assert that the one *indivisible* prescient thinking being, which each of us feels himself to be, may not in its self be liable to *changes independently* of any previous change in the material structure with which it is associated."

Dr. D. Meredith Reese says: "The brain is now regarded as the organ or instrument of the mind in all enlightened creeds, among jurists, theologians and physicians. The mind sits enthroned in its immaterial majesty, employing the brain and its elongations into the nervous system, not only directing all the intellectual, moral and instinctive faculties, but in perception by the several senses; and in the mobility of the voluntary muscles, in obedience to the will; and in a subordinate way, by innervation, and it may be regarded as enabling every organ and tissue in the human body, to perform its destined function in conformity to the vital laws."

Prof. Roberts Bartholow says: Memory, feeling, important functions of mind, are functions of other tissues as well."

It is a well-known fact, that the *brain* is frequently diseased, to a fatal extent, before any manifestation of disease is discovered; also, that considerable loss of brain may give no evidence of insanity.

Again there are no manifestations of disease revealed from post-mortem research that are not found in subjects that died of other ailments, in which no insanity was manifest.

Gynaecological causation and many reflexes are cited by the specialist, as causes of the disease; various organs of the body have been cited by authors as exciting causes of insanity.

Drs. Gillman, D. M. Reese and A. B. Richardson attribute insanity to disease of the brain.

Dr. Richardson says: "Microscopists and pathologists have discovered whenever the mind functions are disordered there is a corresponding disorder and disease of the brain. That not all diseases of the brain are accompanied by disorder of mind, because only a part of the substance of the brain is mind tissue."

Dr. Reese says: "Insanity is feigned so perfectly as to deceive expert specialists and that the insane so adroitly avoid any act or word that might be regarded as insane, as to deceive the best expert. This statement would indicate that neither the disease of brain, or brain tissue (admitting that there is disease of brain, and also a special mind tissue that is diseased), prevents the mind from acting in a sane way when the power of the will is brought to aid."

Dr. Richardson's statement that this change is largely a moral change, would go to confirm Dr. Hemroth's opinion that all cases of insanity are the result of *vice.*

Shaw, Peterson and Binder enumerate a multitude of physiological and physical stigmata as causes of insanity, and of many of the vices, and put great stress on "like begetting like," but the adage that "he is like his father," "she like her mother" and "he comes by it honestly," is perhaps not always true.

I have among my acquaintances, parents who are among the finest types of physique and are now past eighty years old, who have children with physiological and physical stigmata. I also recall a case of cleft palate and double harelip in one of the finest scribes, accountant and business man of county or state. This man's children are fine specimens of physical development and mental ability. Another case where father and mother were dipsomaniacs, and their children, three sons, all of mature manhood and among the best of business men.

Another case of a boy abandoned by his father, is now an able Bishop of one of the most numerous churches of the world. The six-year-old New York boy, the most noted musical prodigy of the age, has no history of ancestral musical talent. The history of Henry M. Stanley goes to show that he is unlike his ancestors. Another case of my neighbor who was a dipsomaniac and suicide, who was the father of five stalwart sons, all past forty years of age, and unexceptional citizens. There seems to be entirely two much stress on degeneracy and heredity,—two little on self reliance and cultivation of the powers of the mind, and especially of the will.

Drs. Rush and Pinel attribute insanity to the habits and appetites, especially dipsomania and kleptomania; in these cases, conscience and the power of the will are enfeebled and unable to restrain appetite.

The mind though regarded as a unit, exists in the threefold nature, or division of the intellect, the sensibilities and the will. That of the will depends largely upon the antecedent action of the sensibilities, and that of the sensitive nature, is based upon the antecedent action of the intellect.

The action of the intellect, is two-fold-external and internal; the external intellect is first developed, and all external intellectual states are dependent for their existence upon external objects. The external intellect does not, strictly speaking, act; it is only acted upon by external objects.

Inanimate nature or matter seems to have been made for the hand-maid and nurse of the Mind in the days of its infancy.

The external senses are the receiving agents of the Mind. The reflective or internal intellect perceives, thinks, suggests, remembers, reasons, imagines and judges.

The words truth, falsehood, power, merit, demerit, cause, etc., express states of the internal intellect, and are of in-

ternal origin. Intellectual derangements are usually first in order in insanity, and very slight deviations or excited conceptions, are first in order, and at this stage may be corrected by a little effort of the will, but if allowed to go unchecked, will soon result in apparitions of the senses of sight and hearing. The senses of sight and hearing are most liable to be affected by hallucinations; at first they are only momentary, but if indulged in and the cause is not removed, they may become lasting. They are sometimes the result of natural and ordinary exercise of the power of forming conceptions, which all persons possess in a greater or less degree, especially children. This was the experience of Cowper in early life, who has made it the subject of a fine passage in the poem of The Task.

> "Trees, churches and strange visages expressed
> In the red cinders, while with pouring eye,
> I gazed, my self creating what I saw."

It is not unfrequently the case that a person looking over the water for an expected ship, bearing a friend or a valuable Cargo; or over the wide prairie, for a procession, will see the image of the expected object, though there is no ship or procession in sight; yet it will seem quite real for the time.

Any of the particular powers or faculties of the mind may be perverted or alienated by our own acts. The sensibilities are ever liable to be alienated, if we permit any of the appetites, passions or propensities continually to extend and strengthen by being stimulated and repeated; they will eventually gain the ascendency over all the balance of the mind. If, for instance, a man indulges, year after year, the propensity of ambition, it will ultimately disorder the proper action of the mental powers and acquire such immense strength, that he feels himself drawn by a sort of compulsion he undoubtedly recognizes, in himself, as he asserts to be the case; the impulse of a species of destiny,

— which is however of his own creation, and imprudence, not by any inward and irresistible fatality.

Every man has a consciousness of a self-determining power within himself,— the will. The appetites grow stronger and stronger by repeated indulgence, and for a while there still remains enough remonstrance in the conscience, and restrictive energy in the power of the will, to ward off the state of thraldom that is likely to come from such indulgence.

Perception, conception, original suggestion, relative suggestion or judgment, imagination, memory, the sensibilities and will, are all susceptible of cultivation, and if neglected are liable to degenerate.

Inordinate indulgence in alcoholic drinks, destroys the principle of self-preservation, together with all the nobler faculties of the mind.

The opiates, tobacco and cocaine, are fruitful causes of insanity and all tend to effeminacy of mind and body. If only alcohol, opium, tobacco and cocaine were discarded, or used only for proper purposes, insanity, suicides, (which is only another name for insanitv,) crimes, poverty and hard-times, would be like angels visits—few, and far between. Man's sanity is in his own keeping. Integrity of life and character established in early life and adhered to through life, are safe guarantees of a sound mind, reason, judgment and pleasant passage over the bar.

NERVOUS PROSTRATION.

BY

F. D. BAIN, M. D., KENTON, OHIO.

Nervous prostration or neurasthenia is a functional disease, or more properly speaking a bodily condition synonymous with nerve exhaustion or nerve weakness.

The etiology of this bodily condition is over-work and this is only a relative term, what work one person would do well without any nervous manifestation would, in another person produce nerve exhaustion. Age is a factor in this disease. It is not seen before the eighteenth year and most cases occur between this and thirty, the next between thirty and forty and lastly between forty ond fifty years of age.

As regards sex it is almost equally divided, though personally most of the very pronounced cases of neurasthenia observed by me have been in the female.

This disease has been called by many the "American Disease;" statistics prove beyond any doubt that our people are more often affected by it than those of any other nation. Neurasthenia is not to be found in cities alone but rural populations suffer from it as well; the practitioner everywhere meets with cases, and the frequency with which this disease is met with among all classes was one inducement which led me to bring this subject before you to-day. There are some phases of this disease that need careful study and superior tact to carry the treatment to successful issue.

High altitudes favor the development of neurasthenia and proportionately more cases are found in the west than in the east or south. Business and professional men furnish the larger per cent of the male patients.

The exciting causes are excessive mental strain, sudden shock and long weary anxieties. To the latter cause, especially, I recall the most desperate case of my observation—

a female patient, 55 years of age, who nursed her mother through a protracted illness. So devoted was she to her aged parent that she gave every hour of the twenty-four to attendance at the bed-side; day after day and week after week she remained faithful in her vigils, when at last the fatal termination of the case occurred. The shock was too great and this devoted daughter found herself the victim of a complete nervous exhaustion. This case exhibited all the features of nervous collapse. Nearly three years have elapsed and this patient is far from regaining her accustomed health. In female patients, disturbance of menstrual function reflex irritations, displacements of uterine appendages are frequent causes of nervous prostration. A certain writer tells us that chronic ear trouble or hypertrophic catarrh and muscular insufficiencies are exciting causes of neurasthenia. In neurasthenia, a few, or many nerve centres may be involved, as Dr. Wood expresses it "simply brain tire," or a more profound condition which implicates the whole nervous system and produces a general nervous break down. Among the very first symptoms in nervous exhaustion, patients cannot sleep—insomnia exists; if not entire loss of sleep, their rest does not do them the good it does in health. They awake in the morning unrefreshed, irritable, not equal to the days duties, a dull aching in the occipital region, an erratic appetite, a stomach that is decidedly nervous, a disposition not to undertake the ordinary work or business of the day and each succeeding day less inclination.

The power of fixing the mind on allotted tasks is very difficult, so much so that the daily routine of the days duties is absolutely distasteful. Weakness of memory follows this condition as well as irritability of temper, life soon becomes a burden, and your patient presents to you a train of symptoms that leaves no doubt in your mind of a very serious condition of the nerve centers. Occasionally, another picture presents itself, and instead of a depressed nervous condition the patient may exhibit symptoms of an over-excited

brain, an exhilartion of the nervous system; these cases are followed much more rapidly by a complete breakdown than the others.

Neurasthenia does not very often lead to complete insanity unless an inherited tendency exists. Some special symptoms are often manifested. Sexual functions are usually impaired, and if the subject be young and in his youth has been a masturbator, emissions may occur, then depression and doubt seizes him and he becomes panic stricken. Great solicitude should be manifested in this class of cases. The heart of a neurasthenic patient is often irritable and sometimes a slight murmur is heard even where there is no distinct anaemia present. Modified types of neurasthenia are seen in adolescence and forms of this disease occurring in young women in early and middle life. The larger majority of wrecks of healthy young lives have been broken by the burdens of domestic life, or ambitious work producing physical bankruptcy. Cases occurring where the patients complain of distressing headaches with the helmet symptoms combined, with the aggravating spinal irritation in addition to other common symptoms, often culminate in crises or storms producing great alarms to the friends as well as the patient. The course of neurasthenia depends entirely upon the degree that the nerve cells are involved. Prof. C. A. Dana estimates from one to five years as the limit of the disease, but we must remember that our patients may not seek medical advice for weeks or perhaps months after the establishment of the disease, or the patient may have been the victim of some charlatan or a patent medicine fiend, so that when the case comes under your observation more nerve cells are involved and instead of simply a case of brain tire you have to deal with an aggravated case of nervous prostration. Dr. Dana also states that neurasthenia is a condition in which the nutrition of the nerve cells is primarily at fault; these cells have lost their power of building themselves up into stable compounds. The facts are indicated by

the terms irritability and weakness. The diagnosis of neurasthenia is quite different from simple nervousness or the degenerative form of insanity, spinal irritation, hysteria and hypochondriasis.

The successful treatment of nervous prostration involves a confidential, if I may so express it, and a medical management — the latter is of little effect without a successful carrying out of the former. A most careful and painstaking examination of the patient is neccessary, first for your own benefit and for the effect it may have upon your patient. To gain the absolute confidence of a neurasthenic patient is to my mind absolutely essential; this you may say is true of the successful treatment of any case. I grant that, but there is something that weighs with a patient in this class of cases that is pre-eminently true, and unless you see that your patient has reposed in you perfect trust, the result will not be what you wish and your patient will eventually seek medical advice elsewhere. I have stated in strong language the first successful step in the treatment of patients with neurasthenia, and I am confident the members will bear me out in it. With absolute trust in you the patient will receive in entire submissiveness the treatment at your hand neccessary to a successful termination of the case. All neurasthenic patients do better to be isolated, the more advanced in degree of severity the more necessary the isolation—especially is this true of female patients. Diet enters so largely into the successful treatment of these patients, that I cannot refrain from giving from the pen of Dr. Horatio C. Wood the following daily menu especially applicable in these cases:

8 A. M. Rolls or toast; cocoa or weak coffee or roasted wheat coffee; beefsteak, tenderloin or mutton chops.

9 A. M. Bathing.

11 A. M. Oatmeal porridge with milk or else a pint of Koumiss.

12 M. Massage.

2 P. M. Dinner. Bouillon with or without eggs; beefsteak; rice; roast white potatoes; dessert of bread pudding or blanc mange.

4 P. M. Electricity.

5 P. M. Milk toast.

9 P. M. Half pint skimmed milk or Koumiss.

Cold sponge baths are almost always indicated. For the respiratory muscles exercise, gymnastics, fishing and rowing should be recommended; very few drugs need be administered. If persistent insomnia is not relieved by exercise, fishing or boating, bromides should be resorted to. For young, nervous persons, when there is great anaemia, Warburg's tincture, or Blaud's pills can be prescribed. For tender spine and occipital pain the Faradic current is applicable. The rest cure as recommended by Dr. S. Weir Mitchell is a mighty factor for good and should be carried out if at all possible; while it may not cure it lays the foundation for future good.

Strychnia and arsenic are of great value in many cases. In local neurasthenia the organ primarily worn out needs rest, for instance, if simply brain tire, rest the exhausted brain, and this is not always an easy task. Cares and anxieties must all be put aside and an invigoration of the nervous system instituted. To summarize the treatment of these cases of neurasthenia —

First, isolation; not in the sense of placing the patient alone to brood over his trouble, but isolated from former surroundings.

Second, pleasant mental recreation or occupation.

Third, abundance of fresh air exercise and nourishing food.

Fourth, medicinal treatment to meet individual symptoms, for no class of cases that come under our care need more careful study, individually, than this class. To the medicinal treatment add the proper hygienic accessories that are attendant upon these nervous cases. These indica-

tions faithfully followed out by the patient under an intelligent professional eye will accomplish the full fruition of our desires.

PARESIS, AND ITS DIAGNOSIS.

BY

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Pathologists, in casting their eyes about for new regions to conquer, have been vigorously pushing their investigations into the field of the brain and nervous system. Hæmi-section of the lower animals and the newer and better methods of staining by which the pathology of brain cells is able to be demonstrated have enabled them to make rapid and far-reaching progress in this line of work. Hitherto little that was *positive* has been suitable to offer students on the subject; so that almost their entire time and attention has been devoted as students to surgery and to the study of the diseases of the chest and abdomen. Considering the great progress made within the last decade in the study of the brain and its diseases, I believe it offers as much that is positive in its physiology and pathology as any of the internal organs. Considering this and the large amount of clinical material at hand now in our large cities, it seems that a diagnosis of the commoner forms of insanity ought to be expected of us all. For an ordinary comprehension of the various forms of insanity, I do not believe in some of the extensive divisions.

Some twenty years ago Dr. Gray of Utica said (and in which there was a soul of truth for the time) as regards classification in insanity; "That all the numerous forms could find a place under mania, melancholia, dementia and epilepsy."

With a few exceptions, as paranoia and catatonia, for practical uses and for facilitating the clinical teaching of the subject the same might be said to-day.

The brain is an organ of our body, a most important part of its anatomy. It has its characteristic diseases, as other organs have, and it is difficult to comprehend why it should be subordinated, neglected and cast into the *limbo* of things unessential.

I purpose in this article an attempt at making clearer the diagnosis of one form of dementia, that of paretic dementia or paresis.

Paresis was first described in 1822 by Bayle, a French physician. Although known as a disease distinct and separate from other brain diseases for the past half century, as distinct as small-pox is from scarlet fever, rarely is it recognized by the general profession, when it is of the greatest importance that it should be. Probably there is no disease as many sided, having as many pathological phases,—psychic, motor, sensory and organic,—as this manifests. Nothwithstanding it is so obscurely ensconced behind these misguiding phases of disease, in most cases it may, by a moderate familiarity with its salient features, be extracted from its entanglement and given its proper place in diagnosis. Its early recognition may redound much to the physician's credit, as it is of great import to the friends of the patient. By a timely diagnosis the bitter chagrin of scandal may be avoided, the loss of property may be prevented, and injury of person, perhaps loss of life, may be intercepted.

It is not infrequent that paretics from whom the moral sense has departed make most flagrant breaches of propriety in public, or are found holding high carnival in *Baccho et Venere*, in the rendesvous of the *demimonde*. Dominated by his delusion he may become most profligate of money, most reckless of his physical power.

How then shall we recognize paresis when we meet it? It is not unlike other diseases. It does not always present to us a uniform array of symptoms, and like other diseases it has its "pot hooks of diagnosis." The chief symptoms of the disease we shall place in three groups, viz: Sensory, motor and psychic, and will try to consider them in this order in dealing with each stage of the disease. One group may be found most prominent in one stage, and subordinated in another. In the later stages we may find all three presented.

Here let us take a few bearings touching points of age, sex, nativity, grade of society, heredity and habits of patient. These are all points of the greatest importance, throwing a flood of light on each case.

As regards age, it is found chiefly between thirty and sixty, the greater number occurring between forty and fifty years.

Paresis draws its numbers largely from the male sex, in the following ratio, comparing different nationalities: France, three males to one female; England, four males to one female; Prussia, fives males to one female; and Spitzka claims for America fifty-eight males to one female. (Mickel).

Dr. Clouston remarks of local distribution: That "Paresis prevails in some races and is unknown in others. The Asiatic is not subject to it, the savage is free from it, and the Irishman and Scotch Highlander need come to the big towns of America to have the distinction of acquiring it."

Paresis chooses its victims from all grades of society, with some seeming preference for the better class.

Paresis is not hereditary as a form of insanity, but in the history of its subjects may be found insane ancestry. To give the habits of these patients is to explain its cause. Some one has abbreviated it into three W's,—"Wine, Women and Worry." Anxiety, mental overstrain and

mental shock may enter largely into cause, but it is anomalous to find a paretic, although there are such, who has not given a loose rein to his appetites and passions, and in most cases grossly given to sexual excess, if not a victim of specific disease.

To divide the disease into four stages instead of three, as is common, will aid in its apprehension. If the disease runs a regular course, these stages will exhibit symptoms characteristic of each, although there being no distinct line of demarcation, one passing gradually into the other.

First, then, is the premonition stage, or that of mental confusion.

Second, That of fibrillar tremblings and slight inco-ordination of the muscles of speech and facial expression, the mental alteration being one of exaltation and excitement, or of depression simulating melancholia.

Third, That of muscular inco-ordination and paresis with mental enfeeblement.

Fourth, That of advanced paresis with no power of progression, speech scarcely articulate—finally paralysis with mental extinction.

The first stage is the stage of incubation. It is the stage wherein the pathological process has made but slight inroads upon the cortical tissue of the brain. The pathological impression as yet being slight, most probably a moderate vaso-motor dilatation, we shall expect fewer and less pronounced symptoms, which is the case. In the examination of a patient in this stage, little can be gleaned from the friends, who are unobservant, perhaps biased, evasive, and frequently studiously withholding facts, save that he is a changed man. What you do get is fragmentary, much that is irrelevant, and passing it through the crucible of scientific analysis you must take it for what it is worth.

A paretic is generally a young man from thirty-five to forty, of good physique, frequently twice married, has been active in business, and hitherto has enjoyed the best of-

health. Now, aside from realizing that he is losing his mental grip, he disclaims any other ills. While he has no hallucinations of sight or hearing, both of these senses may be defective. There may be amaurosis, and a disparity in one of the pupils, most frequently the left, is apparent, a point most important to be noted. Severe cephalalgia is common, and many of these patients complain of pains behind the ears and beneath the occiput. Occasionally there are general bodily pains, which might prove misleading. In short, it is useless to attempt to enumerate the various sensory disturbances in this initial stage of the disease. Aside from slight fibrillar tremblings of the tongue, lips, face and eyelids, with some slight ataxia in the gait, often absent, there is a meagerness of motor symptoms. The psychical group of symptoms are more marked in this stage, and yet so moderate and obscure are they frequently that you scarcely dare suggest insanity. This is the last thing thought of by the friends. Some writers have called this the medico-legal stage of paresis, as their commitment frequently gives rise to litigation. For while it is apparent that the patient's ideas are in some degree exalted and he looks at all things roseate, *yet they may be coherent and do not reach up to the point of positive delusion.* He is forgetful and cannot give you the day and date; says he can no longer add up columns of figures or make computations with any degree of correctness. In his mental operations he becomes confused and is unable to follow any line of thought consecutively. He is restless, agitated, irritable in temper, speculative, not unfrequently making extravagant purchases and unprofitable sales. The sexual propensity is over active and a wife may be subjected to the grossest exactions. These symptoms should place the medical attendant on his guard, and no time should be lost in placing the patient either under the surveillance of attendants or in the security of a retreat.

Passing into the second stage, we should find as a rule an abundance of physical and psychical evidences of brain disease. This is the active stage of paresis. Great sensory perversion is evinced by illusions and hallucinations of sight and hearing. The disparity in the pupils is more marked and is rarely absent in this stage; visual hyperæsthesia is rare, but auditory hyperæsthesia common. Jerking of the tongue on protrusion, with fibrillar tremblings of tongue, lips and muscles of face is more marked. Common sensation is generally diminished and the patellar reflex is in excess. Articulation is hesitating and a dragging of uttered sounds is characteristic. He utterly fails in the pronunciation of words of more than two or three syllables. The gait is ataxic and it is with difficulty that he makes a turn. The mental symptoms of the previous stage have passed from moderation to extravagance. There is a general feeling of *bien etre*, and his delusions of grandeur indicate that his emotional exaltation has reached the highest pitch. In his mental expansion he is a great engineer, a capitalist, a statesman, or president. To bridge the Atlantic is as the turning of the hand; the wealth of a Euclid is but a bagatelle; and no estate even to the height of Deity is beyond the reach of his ambitious delirium. There is in this stage an extreme irritability, and the patient when crossed or thwarted in his plans may become impulsively violent and attack any one in his presence.

In the third stage all the classical symptoms are prominent, *the contracted pupil, the jerky and trembling tongue, the ataxic speech and straddling gait, the expansive delusion*, all point to no uncertain condition. The mental storm, however, has subsided, and now he sits, fat, stupid, dull and demented in his childish self-complacency. This condition occasionally alternates with recurrent spells of excitement. He is yet able to stammer his delusions if suggested to him, but he does not insist on their truth. Locomotion is difficult, and the least trip or push may throw him from his

balance. From this condition of hebetude and advanced paralysis the patient becomes emaciated, loses all power of locomotion and becomes helplessly bedridden.

The fourth stage is the stage of confirmed general paralysis and complete mental extinction. The upper works have been swept away and he now survives by virtue of his medulla, as yet intact. It is a mere vegetative existence. Unable to utter more than guttural sounds, scarcely able to swallow, unclean in habits, invaded by bed sores, rapidly wasting he soon comes to an end.

Paresis does not always pass through these stages, as in any of them the life of the patient may be suddenly terminated by attacks of congestion, epileptiform seizures, or by apoplexy. These frequently occur along the course of the disease and any one of them may hasten dissolution.

Paresis stands alone in being a form of insanity due to organic disease of the brain. It is a disease of the gray matter of the brain, the cerebral cortex—that tissue the most highly evolved in nature—highest in quality, highest in function. Abused by mental and material stimuli, exhausted by continued violent energizing and overstrain, it falls into rapid progressive and irretrievable degeneration. Dr. Clouston has briefly summarized its pathology in this manner:

"Paresis is a disease of the mind tissue; it is essentially a death of that tissue. I look on it as being a premature and sudden senile condition; senility being the slow physiological process, paresis being the quick pathological one. The causes of it are causes which have exhausted trophic energy by over stimulation. Its first stage is accompanied by undoubted vaso-motor dilatation, so that all the tissues enveloping the brain and holding its elements together receive an abnormal supply of blood and thereby acquire tissue hypertrophy, the bones of the scull-cap, the membranes, the neuroglia, the epithelium and the arteries. Just as the tissue of degenerations, especially the brain

degenerations of old age, cannot be arrested and are necessarily progressive, so is paresis. Those high nerve cells have lost their once inherent power of restoration, so they degenerate and atrophy."

According to the latest methods of histological investigations, we have in addition to the above, marked changes in the cell elements and their dendrites in every section of the cortical layer, which consists of a pigmentary degeneration of the third and fourth layers and a granulo-fatty degeneration of the large pyramidal cells. These results may be obtained best by the methods of Bevan-Lewis of England and Berkley of Johns-Hopkins' University.

The differential diagnosis will be made with special reference to those diseases which simulate it most; those having brain and paralytic symptoms, such as alcoholic insanity, syphilitic brain disease, paralytic insanity, what is commonly called brain softening and tabes. Acute alcoholism may easily be determined by the history and time.

In *chronic alcoholism* we find impairment of speech, general muscular tremor, ataxia and incoördination, loss of memory, mental depression more often than exaltation; if the last, you may have hallucinations and delusions of grandeur, but none of these so marked as in paresis. Rarely is there the disparity in the pupils. The muscular tremblings of the tongue and of parts of the face, and the obtrusion of his expansive delusions, are usually absent. The history and general appearance point to a condition of long continued self-abasement. Such a case may make some improvement under treatment; if not he may live for years in much the same condition. which would not be the result in either instance in paresis.

As regards *syphilis*, bodily indications, the history of treatment, its course, are of great value. While the motor signs in this may resemble those in paresis, yet it is more characteristic of syphilis to manifest itself by positive paralysis; a hemiplegia or monoplegia or a paralysis of one of

the cranial nerves point more to syphilitic lepto-meningitis. We look more for somatic than psychic changes in this disease. The insomnia and the cranial pain is greater in syphilis. The mental condition is more likely to be one of depression rather than grandeur. Morbid fear is more common than the feeling of well being. Amnesia and dysphagia occur oftener in syphilis. You may have delusions and excitement, but more probably reticence and stupor. In one, treatment may dispel the symptoms; in the other, it accomplishes nothing.

When insanity follows paralysis of central origin, it is called *paralytic insanity*. It is entirely distinct from paresis. In fact, in the latter, insanity preceded the paralysis. Paralytic insanity follows gross brain lesions, apoplexies, ramollisments, tumors, hemorrhages, embolisms, thromboses, atrophies and degenerations. Paralytic insanity is not essentially a specific disease; it does not run a progressive course; it is not incurable; it is not regular in the variety of its symptoms. The ones who suffer most from these lesions are those who sustain more or less permanency of the paralysis. To this is added a stuttering speech, an impared gait, and perhaps an unequal pupil, symptoms closely simulating paresis. But from the history of a structural lesion and its effects still apparent, and remembering that paresis is progressive and *rapidly repairs its apoplectic seizures and paralysis*, you will be able to distinguish the two though having some symptoms in common.

Paresis seems to be much confounded with chronic *brain softening*. There may be very small portions of softening on the surface of the cerebral convolutions in paresis, but it is not a diffused brain softening. Diffused brain softening is a rare disease; it occurs mostly in the aged. There is a history usually of coarse brain lesion; you do not have the motor signs of ataxia and inco-ordination as in paresis. There is a marked absence of the classical symp-

toms of paresis. There are no active mental symptoms usually, but are rather of a passive kind. Its chief mental symptoms are loss of memory, lack of attention, marked mental failure, drowsiness and fatuity.

Paresis is often confounded with *tabes*. The two diseases often exist in combination. The tabetic symptoms are manifested by the gait, retarded sensation, and trophic changes may be taken on in the advanced stage of paresis. I doubt if paresis ever follows tabes. Considering them separately there should scarcely be any confusion. To be sure, in tabes you may have the Argyle-Robinson pupil and ataxic gait; but except where the two are combined will you have the Romberg symptom, absence of patellar-reflex, lancinating pains, and girdle sensations so very characteristic of disease of the posterior columns.

Paresis is the most fatal form of insanity; more to be dreaded than any other variety; not alone is it destructive to mind, but invariably to life itself, and that in a few brief months or years. So fatal is it, so unmoved by treatment, that there is no well authenticated case of recovery on record.

LITERATURE.

Clouston, Mental Diseases.
Mickel, General Paralysis of the Insane.
Savage, Insanity.
Mercier, Sanity and Insanity.
Kraepelin, Psychiatriæ.
Kraft-Ebing, Psychiatriæ.

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THE CUTANEOUS STIGMATA OF HYSTERIA

BY

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That astonishing cures are accomplished by suggestion no one will deny. That the blind are made to see; the dumb to speak; and the lame to leap as the hart, we have abundant evidence.

Not long since all Europe was astonished by the miraculous restoration to health of a locomotor ataxic, the diagnosis of whose condition was made by no lesser luminary than Charcot. I do not now recall the particular shrine engaged in the restoration of sclerosed nerve tissue of the posterior columns of the spinal cord, but perfectly recollect the prompt proof produced that one of the able assistants of the great French neurologist had pronounced and demonstrated to others, the hysterical nature of the case. Before denying such cures we should pause and consider the erethistic psychology of the anxious, diseased but hopeful pilgrim who, after a journey full of expectant excitement, falls on his knees before the healing shrine with tearful eyes cast on the sacred relics or towards heaven prays that the torments be cast out of his body.

That these people are blind, that they are dumb, that they are lame and halt we must acknowledge; and it is necessary that their diseased and turbulent emotions be stirred to their muddy depths in order to accomplish a cure. It is not necessary however that such cases should go unrecognized to the quack, or diagnosed as organic affections and the poor sufferer condemned to despair. Yet this is often done in cases where the paradoxical syndrome is evidence complete of their functional character. It occurs every day. We must correct our diagnosis, or continue to

listen to the tale of the wonderful cure of John Smith or Sarah Jones while laboring under the mild lunacy of the Christian scientists or at the touch of the healing hands of some long haired, unctious tongued fakir. It is a bitter dose but in the end salutary.

When we have mastered the diagnostic points necessary for a prompt discovery of these cases, we will no longer be humiliated by the knowledge that the oesteopath recently tried and acquitted in a neighboring city, was *defended gratis* by a brief written by an ex-governor and the senior senator of the great state of Ohio, who feels grateful that an ailing child had been benefited by having its spinal vertebra wiggled by the same dextrous hands that are busy pocketing the golden guinea of the credulous.

I think you will discover but little that is new in this paper, yet I hope to call your attention to some points which may have escaped your attention or memory and so add to your diagnostic ability. If I succeed this far my reward will be sufficient.

In this paper it is purposed to deal only with the cutaneous stigmata of hysteria. The mucous membranes will not be mentioned except when directly related to the cutaneous phenomena.

The writer maintains that the use of the term "traumatic neurosis" is but a confusing multiplication of terms; and that the phrase "traumatic hysteria" should not be dignified by heading the title page, but appear in the paragraphs on aetiology where it properly belongs.

Dogmatic statement is rendered necessary by lack of space and the magnitude of the subject. Pardon it.

The cutaneous stigmata of hysteria may be divided into two general classes: (a) According to the character of the nerve disturbance—anaesthesia, hyperaesthesia and paraesthesia; (b) according to the region of the body affected,—general isolated, hemi-segmental, disseminated.

The term anaesthesia when applied to the skin has with our increase of knowledge become a general term, under which are now grouped at least five well recognized special cutaneous anaesthesiae;—anaesthesia to touch, heat, cold, electricity and pain. Or tactile anaesthesia, thermo-anaesthesia, cryaesthesia, electro-anaesthesia and analgesia.

The term hyperaesthesia no longer conveys to the medical mind a clear picture. It requires no less than six principal divisions and several subdivisions to accurately indicate the exact nature of the exaggerated sensorium. They are: hyperaesthesia to touch, cold, heat, electricity, pain, and to the touch of metals; or tactile hyperaesthesia, cryaesthesia, thermaesthesia, electroaesthesia, hyperalgesia, and hapalgesia.

Under tactile hyperaesthesia we recognize the hyperaesthetic spots or zones, touch or pressure of which is painful and also liable to give rise to some form of an hysterical attack and hence are called hysterogenic. Under the head of cryaesthesia we have knowledge of the phenomena of hypercryalgesia, or over sensitiveness of the skin to cold, or rather where a moderate degree of cold causes actual pain. We also meet with a superlative sensitiveness of the skin to heat which is exactly described by—hyperthermalgesia.

Paraesthesia is a term which includes: (1) Subjective sensations of tact, pain, heat, cold and electricity, without such sensation being actually produced; (2) perversions of cutaneous sensibility—that is a lack of correspondence between the impression experienced by the patient and the actual one conveyed by the examiner. Thus tact may be recognized as pain, a prick as heat, cold as a stinging sensation, etc. Sometimes one touch is felt as two, three or even five contacts and then is called polyaesthesia. The patient may be unable to correctly locate the contact but persistently refer it to some other part of the body, more or less remote from the point touched. When it is referred to

a corresponding place on the opposite side of the body it is named allochiria.

All of these various nerve disturbances, from the portion of the body occupied, have acquired terms aptly localizing.

Thus by prefixing the localizing term general, hemi, para, segmental or geometric and disseminated, to any of the descriptive terms before mentioned we at once localize and describe the character of the stigmata.

Now that we have refreshed our memories with this short review of the nomenclature of the neurosal disturbances of the skin let us turn back to a consideration of their occurrence as a part of the complex syndrome of hysteria. All of these stigmata possess certain characteristics, the recognition of which is usually possible and certainly necessary to a correct diagnosis. Let us refer to them.

Anaesthesia in this connection is used in its widest sense, insensibility to touch, pain, cold, heat and electricity.

Hysterical anaesthesia presents all of the named varieties; is usually more profound than the organic; has sharply delimited borders that are prone to shift from day to day and not infrequently during one examination. Hemianaesthesia is an exception to the latter statement.

The distribution of these anaesthesiae does not correspond to the distribution of the cutaneous nerves nor regions supplied by certain spinal segments. The areas are psychic not anatomic.

Tactile anaesthesia is most common, but as Pitres has pointed out is almost always associated with analgesia. General anaesthesia is rare. Figs. 1 and 2 illustrate a case of hysterical astasia-abasia in which tactile anaesthesia was nearly general. The man was a peddler and sat on his wagon and drove spirited horses with confidence and safety but fell to the ground if he attempted to stand. He had no other sensory disturbances. Notwithstanding his complete loss of the sense of touch in his hands, he could do up his packages and tie knots with all his former neatness and

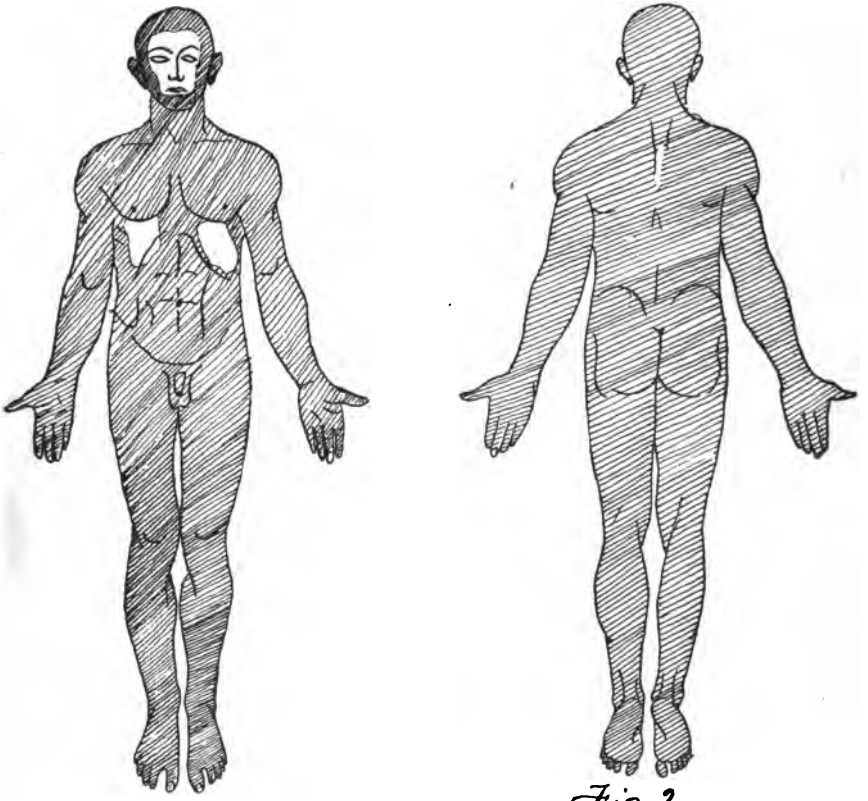


Fig 1

Fig 2

Tactile anaesthesia in a case of hysterical astasia abasiae presenting small areas of integument with normal sensation. A hot suggestion in the shape of a cherry red iron to the spine cured the case. (Personal observation.)

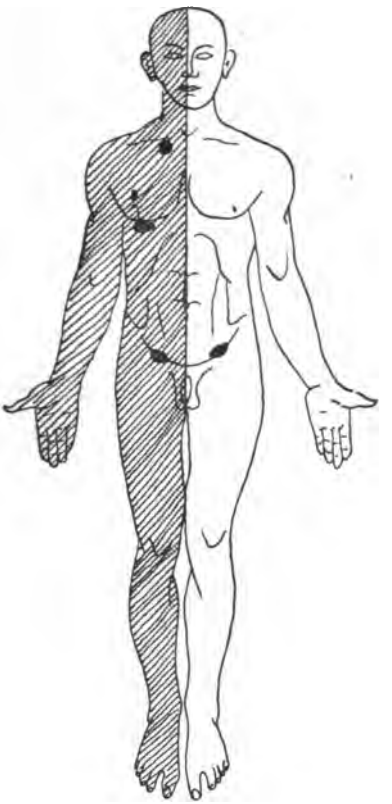


Fig 3

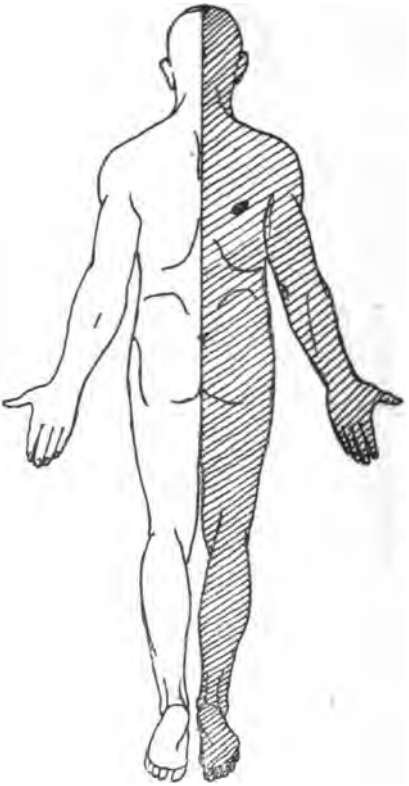


Fig 4

Hysterical hemianaesthesia. Whole side is anaesthetic to touch, pain and electricity. The black spots represent hyperaesthetic zones and are called hysterogenic. (Personal observation.)

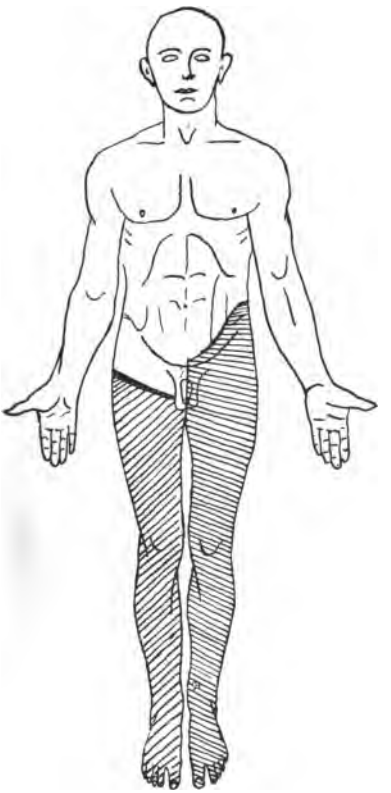


Fig 5

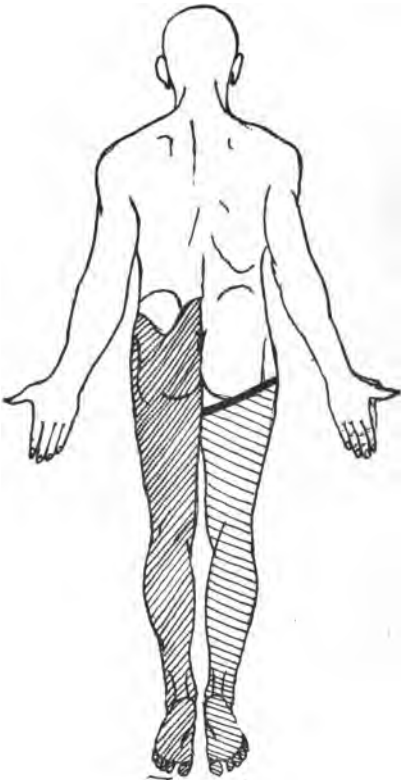


Fig 6

The shaded lines on the front and back of the left side represent the lines of an organic anaesthesia, while on the right we see the sharp border of a typical segmental hysterical anaesthesia. The heavy lines show the sharp delimitation which shifted two and one-half inches upwards on the second examination. (Personal observation.)

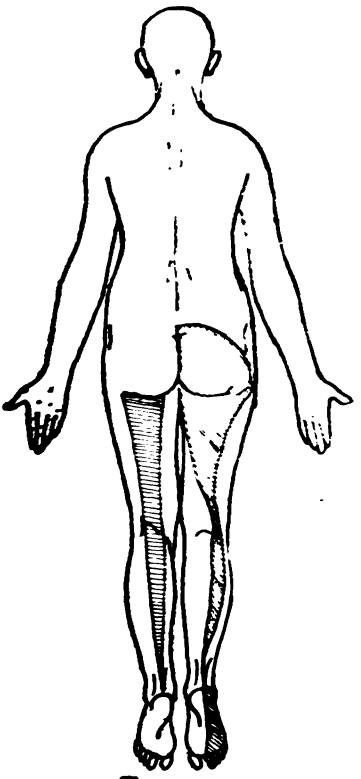


Fig 7

The strip of hysterical analgesia, electro-anaesthesia and thermo-anaesthesia shown by the transverse lines on the left leg and thigh is contrasted with the right half of the area of a lesion of the lower segments of the cord. (Personal observation.)

dispatch with hardly a glance to aid him. The mask-like area over the face, the two spots beneath each breast and the small patch on the back were his only areas of normal tactile sensation over his entire cuticle. The mucous membranes of the mouth and eyes were normally acute to all impressions but touch.

Hemianaesthesia is the most common and is usually accompanied by analgesia. It is profound and usually complete—head, arm, trunk and leg. The line of delimitation is sharply drawn exactly dividing the body into lateral halves. Lapping of the anaesthesia across the middle line occurs, but is rare. Figs. 3 and 4 were taken from a case recently referred to me for examination and treatment by Dr. Crile. The blackened spots on these figures were hyperaesthetic areas, the hysterogenic zones. These hyperaesthetic zones present the curious anomaly of being on the insensitive side. They are also, as in this case, occasionally found on the sensitive side. Touch or pressure over these zones is often sufficient to produce an hysterical seizure. The experiment was not made in this case, but the ovarian zones were so extremely sensitive as to lead to the idea that she had ovarian disease, an idea which examination under anaesthesia quickly dissipated.

In this case we again observe a phenomenon which contravenes our conception of the laws of sensation. Notwithstanding the complete absence of the sense of touch and pain in her right hand she could, with blinded eyes, tie knots and place pins in her clothing with the usual female dexterity. It is by these little inconsistencies that we are aided to a correct diagnosis. The special senses in this case, as is the rule, were affected. Taste and smell on the anaesthetic side were absent and the visual fields were contracted. In this case I again met with a curious phenomenon, the import of which I am not yet sure. In making and breaking the galvanic current about the temples she

saw the flash of the light only in the *eye of the anaesthetic side.* This fact is suggestive.

Figs. 5 and 6 contrast the levels of the lines of delimitation of an anaesthesia of organic origin and its hysterical simulator. The organic anaesthesia as represented on the left side of the figure was taken from a clinical patient with a lesion of the first lumbar segment, which paralyzed both legs and anaesthetized both up to the level indicated. The hysterical anaesthesia as shown by the shaded lines on the right leg and thigh is the half of a chart made of a case of hysterical paraplegia, traumatic in origin.

In Fig. 7, are contrasted the areas of anaesthesia in a lesion of the lower segments of the cord and the analgesia and thermo-anaesthesia of a case of hysteria reported in the May number of the Cleveland Journal of Medicine. The areas of anaesthesia in both of these cases were bilaterally symetrical but are combined for the purpose of making the contrast more marked and striking. The organic anaesthesia and analgesia is shown on the right buttock and limb while the analgesia is figured on the left limb. Such cases often show an equal amount of motor palsy, but unlike its hysterical imitator the bladder and sphincter control is always weakened or lost in an organic affection of the cord at this level.

Fig. 8 represents the general tactile anaesthesia and analgesia of a case of locomotor ataxia which I now have under observation. She has preservation of the tactile sense over the entire body except the double shaded area shown in the figure. Her disease began in the sacral cord, and when I first examined her the anæsthesia was confined to the area on buttocks and back of thighs and legs and soles of feet as shown by the crossed lines. Instead of the usual girdle sensation she experienced a sensation, (to use her own words,) of a cannon ball in the rectum. Tactile sensation was only lost over the area marked by crossed lines.

1

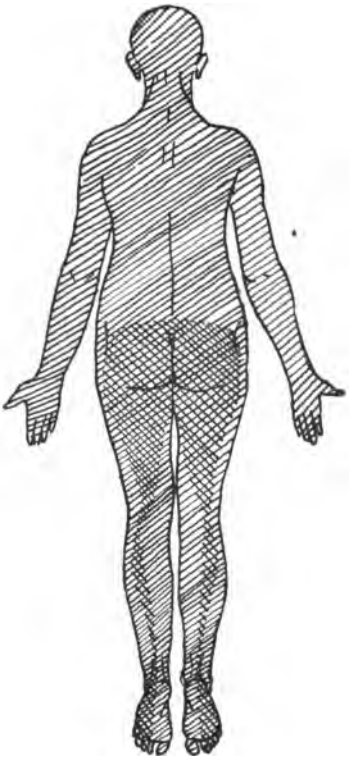


Fig 8

The double shaded lines represent a tactile anæsthesia incident to a lesion of the last segments of the cord. The single shading represents the distribution of hypercryalgesia and hyperthermalgesia.

These interesting phenomena were observed in a case of tabes dorsalis beginning in the sacral cord. (Personal observation.)

Fig. 9

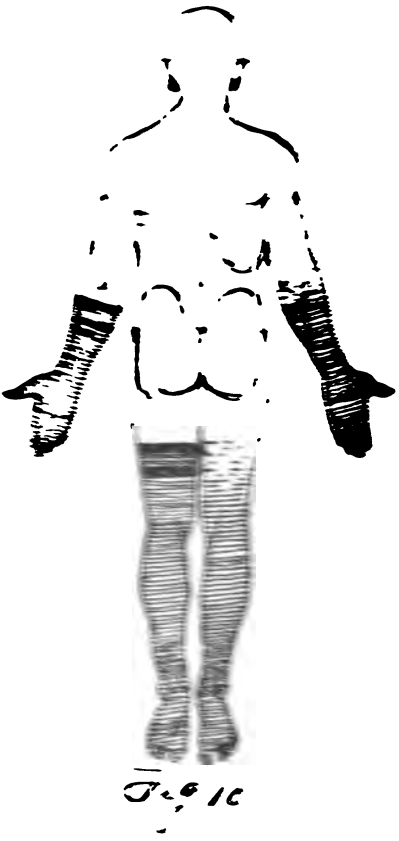


Fig. 10

The right half of the chart represents the tactile, anaesthesia and analgesia of the glove and stocking type and with the characteristic fading borders of an alcoholic neuritis. The other half illustrates a glove and stocking anaesthesia and analgesia with the typical sharp and shifting borders of hysteria. Personal observation.

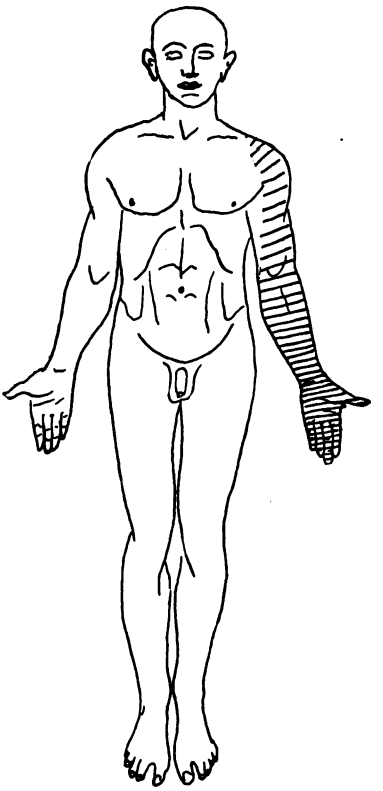


Fig 11

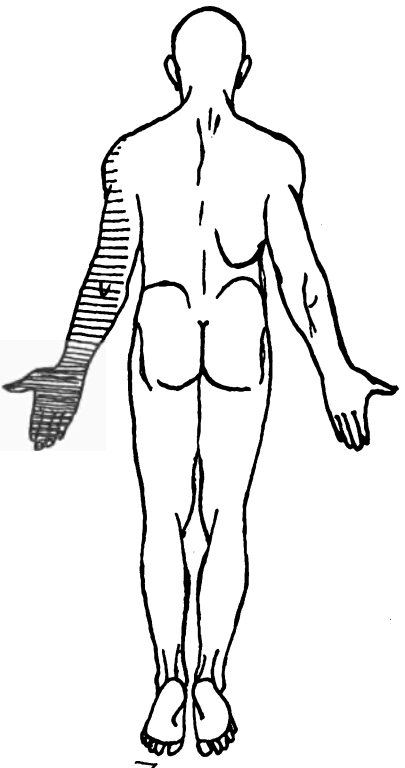


Fig 12

A sleeve or segmental tactile anaesthesia and analgesia from a limited lesion of the cortex. Insensibility is complete at the finger tips, gradually fades into the normal skin at the shoulder. (Personal observation.)

[illegible] areas of tactile anaesthesia in an obscure case being the [illegible] stigmata of hysteria (mihi). Personal observation.

It is interesting to compare this figure with Figs. 1 and 2 the case of astasia-abasia. This very interesting case of tabes, has a general distribution of the symptoms that Starr has recently described as a new symptom of tabes, hyperthermalgesia and hypercryalgesia, a condition wherein a moderate degree of heat or cold produced sensation of pain in the part touched. I have met this condition twice in hysteria. Once confined to the feet and legs, and once to the head and face.

In Figs. 9 and 10, I have again combined for the sake of comparison, the right half of a chart of alcoholic neuritis with the left half of a case that presented a typical segmental or stocking anaesthesia of both lower limbs, and a segmental or glove anaesthesia of the left hand and arm. All four members of the alcoholic were anaesthetic, complete at the extremities, gradually almost insensibly fading into the normal. How different the hysterical case. In the case, as the chart shows, the border limiting the height of the anaesthesiae was sharp, and on second examination shifted nearly two and one-half inches.

This form of hysterical anaesthesia is often spoken of as being pathognomonic but this is a mistake as it is met with in the disease of the spinal cord of pernicious anaemia, locomotor ataxia, multiple neuritis, leprosy, syringomyelia, and in focal lesions of the cerebral cortex.

Compare Figs. 9 and 10 with Figs. 11 and 12 and note how nearly they correspond. These latter figures are taken from a chart made from a case of syphilis of the cortex. The patient after many nights of agonizing headache lost the use of the left hand and the lower muscles of the face on the same side. The hand was anaesthetic over the area shaded on the chart, and has so remained. Horsley and Charcot have shown that segmental distribution is characteristic of cortical as well as hysterical anaesthesia. Here again we are aided by the law of sharp borders, which are absent in

all of the above mentioned disorders, certainty becomes doubly certain if the border is shifting as well as sharp.

Many cases of hysteria are not hysterical. Oftimes we suspect the hysterical origin of some obscure disorder, but through lack of sufficient data are plunged into the mire of doubt. Here a single positive stigma is of inestimable value. Only those who have searched can tell of the patience needed to find those small isolated islets of anaesthesia, and they are the only ones who can tell of the triumphs that the discovery afforded them. The little patch of anaesthesia shown in Fig. 12 is the only positive indication of the nature of a distressing weakness of the arms. Time and recovery proved the diagnostic value of the stigmata.

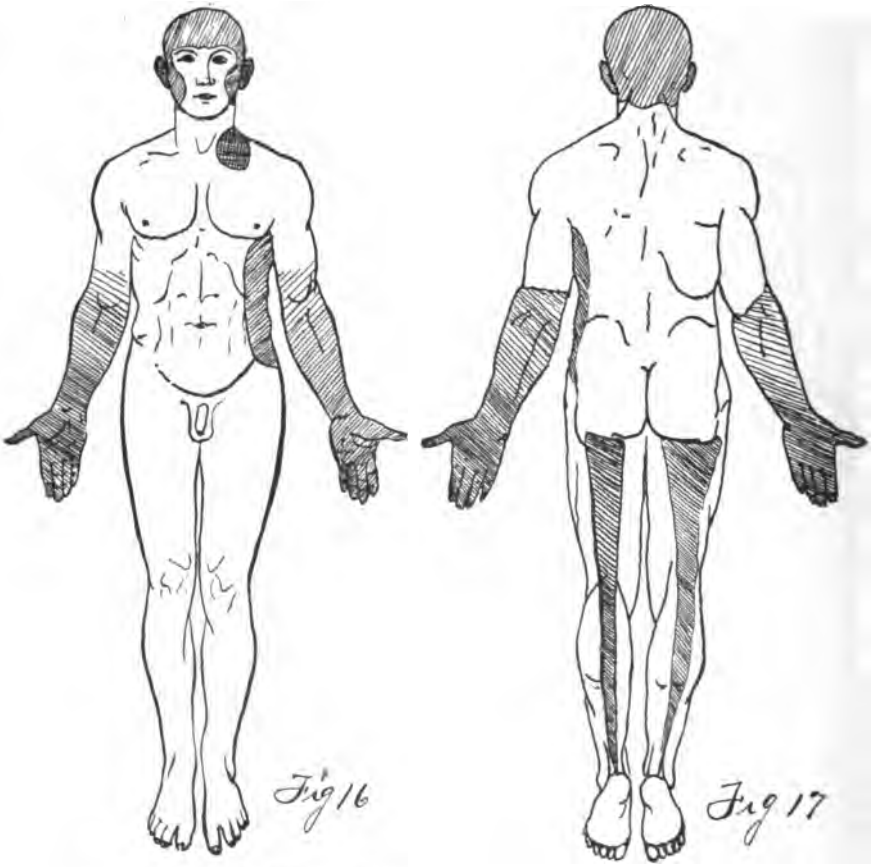
Figs. 14 and 15 are borrowed from Pitres, and show to a wonderful degree the occasional dissemination of these islets of anaesthesia in the hysterical. I had the good fortune of seeing a very similar case in the clinic of Marie, but have never had the pleasure of observing such phenomena in a case of my own. Briquet says this form of anaesthesia is the most common form of hysterical anaesthesiae.

Now a word in regard to the location and association of these stigmata. Literature and observation show that we may have in a given case any one of these disturbances of sensation, situate on any part of the skin, and occupying an area varying in size from the smallest coin to the whole surface of the body; that we may have several, and possibly all of these disturbed sensations associated in one case, with a distribution as variable as the number will permit. Thus, in figs. 3 and 4 we discover right hemianaesthesia and hemianalgesia with three small areas of hyperaesthesia occurring on the insensitive side and completely surrounded by anaesthesia. On the sensitive side over the ovarian region was a small area of skin over sensitive to touch and painful impressions. In figs. 16 and 17,

Fig 14

Fig 15

An unusual case showing the dissemination of the islets of anaesthesia. (Pitres.)



Loss of pain and temperature sense with preservation of tact in a case of hysteria major shown by oblique lines. Small spot shown by crossed lines had only loss of temperature sense. (Personal observation.)

we have quite a combination; segmental analgesia, electro-anaesthesia and thermo-anaesthesia of both hands and fore-arms, with preservation of tact; an incomplete segmental or hood-shaped area of analgesia, electro-anaesthesia and thermo-anaesthesia, embracing the hairy scalp and part of the face; one islet of thermo-anaesthesia; one large area of analgesia, electro-anaesthesia and thermo-anaesthesia on the trunk; and a long narrow triangular strip, the apex at the heel, the base at the gluteal fold, of analgesia, electro-anaesthesia and thermo-anaesthesia. In this case the disturbance of sensation was exactly that of syringomyelia, but a history of hysteria major, and absence of muscular atrophy excluded the organic, and recovery established the functional nature of the disease.

In conclusion: The neurosal stigmata of the skin in hysteria are not confined to the distribution of the cutaneous nerves nor to the zones supplied by certain segments of the spinal cord. Horsley and Charcot have shown that there is a close resemblance of the anaesthesiae of limited lesions of the cortex and the segmental anaesthesiae of hysteria.

The law of sharp and shifting margins of the functional anaesthesiae does not however apply to the softly shaded margins of the organic cerebral anaesthesiae. Broadly speaking, the areas of hysterical skin stigmata are psychic not anatomic.

Hysterical anaesthesiae are usually profound; have sharply defined borders, which are prone to shift from day to day, and often during one examination. Any case may present several varieties and incongruous association of these varieties. There is no fixed law of distribution, but they usually so arrange themselves as to naturally fall into one of the classes of general, hemi-, segmental or isolated.

Finally, they all possess certain common characteristics which the "seeing eye" is certain to detect and place in the functional class where they belong.

DISCUSSION.

DR. WM. T. CORLETT, Cleveland: I have endeavored to follow the speaker, but I must say I have failed to get any special points from the paper. The subject of diseases of the skin due to nerve lesions is one that has interested me for a good while. Some years ago I collected several cases, reports of which were presented to the American Dermatological Association, in which I tried to prove that certain eruptions were due to lesions in the nerve centers. I failed to establish my point because my deductions were purely theoretic. Further observation confirms my belief that many skin lesions are due to nerve influence, but fail to see that the paper just read throws any additional light on the subject. At the present time the list of diseases, in which the relationship has been established by post-mortem examination, between nerve and skin lesions, is extremely limited.

Syringomyelia is about the only one in which we can say positively that lesions in the nerve-centers result in subsequent changes in the skin. The condition known as hysteria is frequently associated with lesions of the cutaneous surface. Recently a case in point came under observation. The disease, "idiopathic gangrene of the skin," occurred in a young girl afflicted with hysteria. I believe the disease is due to some yet unknown disturbance in the nerve-centers. There has been a tendency, especially in England, to regard these cases as those of malingering. I remember three especially, in the London hospitals, which were watched, and in one malingering was detected. The girl used some escharotic to produce the lesions. But that many of the diseases of this class are due to nerve-disturbances is recognized in America and France, where a number of cases have been reported.

An interesting question comes up as to the power of suggestion in producing changes in the skin. Charcot and others have produced by suggestion changes in the skin, varying from erythema to a blister over an extensive area. Very little is really known on this subject, however, and as yet sweeping conclusions can not be drawn.

DR. L. B. TUCKERMAN, Cleveland: I have not had a very large opportunity to study this question, but the remark that the Doctor just made, that further and

wide observations were valuable and necessary (and the Doctor alluded to the eye field), makes me observe that the trouble with many of these observations, particularly in regard to the eye field, is due to the fact that the instruments of precision are so cumbersome it is impossible to carry them about. I had a case recently in which the range of the color field entered in as an element in forming an opinion. After using the large perimeter, twenty inches in diameter, I devised a small, compact instrument for that purpose. The ordinary perimeter you will remember, is in a box about twenty inches long, twelve inches wide and two inches deep, a very convenient (?) thing to put in your vest pocket. But the whole essence of it is a graduated circle and a plane that can be tilted, which you will find in this small instrument.

DR. CHARLES J. ALDRICH, Cleveland: I am truly sorry that the first speaker was unable to discover any point in my paper. The keenness of my disappointment, however, at this failure on my part, is somewhat assuaged by the memory of the hard times I experienced while attempting to get the anaesthetic originals of these charts to discover a point. Indeed the fate of this paper seems to be in the discovery of unexpected areas of anaesthesia. My critic seems to labor under the delusion that I am poaching on his preserves and treating on lesions of the skin. I am not now, and never was, aware that the cutaneous stigmata of hysteria were considered lesions of the skin.

The contents of the paper is but a small part of the observations made on this interesting subject. There are many wide gaps in our knowledge of hysteria to be filled in by honest and thoughtful observation only. I know that there is an idea that these stigmata are all sham, and that these patients are malingerers and do not have these areas of perverted sensation, but any who has examined these cases fairly, must be satisfied that they exist as that the sunlight is present every morning.

THE MEDICAL TREATMENT OF INEBRIETY WITHOUT RESTRAINT.

BY

H. A. RODEBAUGH, MARYSVILLE.

This paper is based upon the experience obtained in the treatment of over two thousand cases of inebriety and other drug addictions, since 1884. I only regret my inability to utilize this wealth of clinical material as it should be, and as the importance of the subject would justify. These cases comprised both sexes, of all ages from seven to seventy-five years, representing all kinds of business and professional men, mechanics, farmers, and laborers, all degrees of education and no education, paupers, millionaires, wise men, and fools. Every grade of physical and mental degeneration, caused by alcohol and other drugs, was observed, thus offering an excellent opportunity to verify or reject the accepted theories of the etiology, pathology, and treatment of this protean malady. It is proposed in this paper to discuss alcoholic inebriety only.

Alcoholism is a specific, neurotic disease, with a distinct pathology, relating to nutritive changes in the nerve cells; it is preventable and self-limited; its average duration is about seventeen years. The symptoms and course of alcoholism are so familiar that additional description is unnecessary. The grosser lesions of the brain, stomach, liver, kidneys, etc., do not constitute the disease of alcoholism; they are products, not factors. Their pathology and treatment, after the removal of the cause, do not differ in any respect from that with which you are all familiar.

A true impulse or crave for alcohol, which constitutes this a distinct disease, is always the direct effect of previous moderate use, so that the inebriate drinks, not from pleasure, but to gratify a craving begotten of prior indulgence. As soon as the anaesthesia, produced by the last pota-

tion, has passed away, every tissue of the body cries out for a repetition of the dose, which, when taken, produces such gratifying relief that the poor victim plans for another drink before the cup is drained. Thus does alcohol breed inebriety.

The investigations of Schulinus reveal the fact, that alcohol has a special elective affinity for nervous tissue, and that it induces a distinct change in the nerve cells, discoverable by the microscope. These changes consist for the most part in an increase of connective tissue, the neuroglia, with consequent atrophy of the nerve cells.

On questioning inebriates, it will be found that one of three reasons is usually assigned as a cause for beginning the habit; first, social drinking; second, neurasthenia; third, traumatism. Social drinking is undoubtedly responsible for the largest number. There are indeed few individuals who can continue a round of social drinking for several years, without becoming confirmed inebriates. It has been said that those who do not become diseased, possess a superior power of resistance. This may be due to heredity. Some have even asserted that individuals, whose ancestors were inebriates, possess immunity to the susceptibility of the alcoholic poison. Though this be true, it does not follow that inebriate parents are incapable of transmitting other and perhaps worse forms of physical disease and mental peculiarities.

Next to social drinking, the largest number of inebriates is found among those who begin drinking because of an inherited or acquired weakness, who are naturally nervous, unable to withstand pain, whose life work is a constant worry, and who suffer from exhaustion and melancholy a deeper, and more distressing pain. Such an individual will resort to anything most convenient that will give ease, sedation, or oblivion. Alcohol may be resorted to at first, as an incident, then as a necessity. "The worker, in the

use of alcohol, consumes his capital instead of his interest, with the inevitable result of bankruptcy in time." (Sippe.)

Fortunately, inebriety from traumatism is rare, and is usually attributed to injury of the head. Two such cases have come under my observation and both were incurable.

It would be interesting to know, at what period in his career, the moderate drinker becomes a confirmed inebriate. Alcoholic excess, long before structural changes can be predicted in the nerve centers, is responsible for something more than the mere functional disturbances described as drunkenness. It engenders a nutritive perversion which becomes more marked after each acute attack of acute alcoholism, which is expressed in a tendency to recurrence. When these nutritive changes have progressed to a degree sufficient to interfere with normal function, and the individual is no longer able to resist the temptation from within to supply the stimulant required, it is safe to say that he has crossed the line, and from that moment begins an artificial existence. It matters not henceforth whether he supplies the stimulant daily or at longer periods, his will power is weakened and slowly or rapidly there will develop persistent mental enfeeblement with sensory and motor anomalies. In a majority of the cases observed, the mental faculties were affected in the following order: Will, memory, attention and judgment.

Headache was absent in ninety per cent. of the cases treated. When severe and persistent, it compels abstinence and thus becomes a potent factor in arresting the development of the disease. In the treatment of inebriety without restraint, there is very little difference in the management of the constant drinker and one who drinks periodically. Inebriates from the ranks of social drinkers are more easily cured than those belonging to the neurasthenic class.

Not many years ago, any method of treatment, which did not involve the physical restraint of the patient, was

considered inefficient, the object being to prevent him from procuring the accustomed stimulant. In the plan herein proposed, restraint is neither advisable, or necessary, because the patient is supplied with all the alcohol he desires, and in whatever form he prefers, with the result that all craving or desire for drink is abolished by the third or fourth day.

At this point the question may be asked, Are these cases curable, and if so, what constitutes a cure? As the duration of the treatment about to be described rarely exceeds four weeks, the reply, based on this period of observation, is that they are curable and that a cure consists in complete absence of the drink craving and restoration to normal function, including the will, followed by a complete change in the physical, mental, and moral condition of the patient, resulting in normal appetite for food at regular intervals, sound, refreshing sleep, improved nutrition, manifested by increased weight, and a general feeling of well being. Morally, the change is manifested in an aversion to the society of drinking companions, pride in personal appearance, a rekindling of love for home and family, with returning interest in business affairs. When these changes have been wrought in the time specified, the patient is discharged with the assurance that nature will complete the cure in time.

From information obtained from every available source, the subsequent history of these cases show, that if we include in one class all cases of inebriety treated, the average ratio of permanent cures (those who have been total abstainers for five years subsequent to treatment), is sixtyfive per cent., a percentage which ranges higher as the condition and environment of the patient is improved. The inebriate is deserving of the same treatment he would receive were he suffering from any other dangerous disease. In this, as in many other forms of nervous disease, the advantages of Sanatorium treatment are conceded by all. No amount of

contriving can offer the patient the same care at home that can be had at a properly conducted institution, while the moral effect of association with others of his class, is not without benefit.

One of the elements of success in the treatment of inebriety, is tact in the management of the patient at the beginning of treatment. More than one-half of these cases are brought, helplessly intoxicated, by their friends. They have either reluctantly consented to treatment or were brought without their consent. Many of them never heard of treatment for drunkenness, but, as nearly all of them suffer from some functional, or organic disease, it is comparatively easy to keep their attention fixed on this while treating the inebriety. It is advisable in such cases to explain the true state of affairs after ten days or two weeks, by which time the patient will have experienced such relief that he is not only willing, but anxious to continue treatment. Elimination is necessary in all cases; cathartics, diuretics, diaphoretics, and baths must be used as required. The selection of remedies suited to each individual case must depend not only on the condition of the patient, but the facility with which they can be administered and the certainty of absorption.

This brings us to the consideration of hypodermic medication, without which the treatment of inebriety would indeed be difficult. Solutions for hypodermic use, if prepared antiseptically, may be kept several weeks by the addition of boracic acid. Remedies thus used are nitroglycerine, pilocarpine, thein, duboisia, spartein, picrotoxin, and atropin and cocaine combined, the latter possessing peculiar hypnotic properties differing materially from that of either drug when administered alone. Strychnia and apomorphia are never used. These remedies, with the exception of spartein, are used for brief periods only to meet special indications. Thus, spartein and nitroglycerine combined are used in cardiac depression, picrotoxin in

cases characterized by excessive tremor, and pilocarpine to assist elimination. Sulphate of spartein, on account of its valuable tonic properties, is continued throughout the treatment. "It more truly deserves the title of heart tonic than any other remedy." (Bartholow.) Remedies for internal use consist of alternatives and tonics. Recently the gold salts have been largely used, especially the chloride of gold and sodium, either alone or in combination with other mineral alternatives of the class which increase waste. Abundant clinical experience has demonstrated the value of the gold salts in all forms of nervous disease, characterized by sclerosis. These drugs should be administered in small and frequently repeated doses, in solution with a definite quantity of tannin, to form tannates, and thus prevent injurious local action, at the same time securing slow absorption and adequate elimination.

The dietetic treatment of inebriety is highly important. The administration of proper food at regular intervals, day and night, is an important factor in the successful management of these cases.

The usual result secured in a period of four weeks' treatment is protection of the patient against himself, and restoration of his will power, so that a further aggravation of his condition by the continued use of alcohol will be prevented, then by subsequent treatment, continued at his home as long as may be necessary, we endeavor to restore him to an approximately normal physical condition.

While this short period of treatment is criticised by many, who have been engaged in this work for years, and whose opinions are entitled to consideration, it must be remembered that it is utterly impossible for the great majority of inebriates to avail themselves of treatment at an institution where one year or more is required. An unprejudiced comparison of results however will not be found unfavorable to the short time treatment.

CHAPTER VII.

A CASE OF INTRA-PERITONEAL GESTATION AT TERM, OPERATION AFTER DEATH OF FETUS—RECOVERY.

BY

M. ROSENWASSER, M. D., CLEVELAND.

On February 16th, 1897, I saw in consultation with Dr. G. R. Feil, a woman, who had then gone beyond term about two weeks and had gradually ceased feeling "life" after having suffered from false pains between February 1st and 3d. My advice was sought not on account of any suffering, but because husband and wife felt uneasy about the probable death of the child, and anxious to have terminated the pregnancy now overdue. Her physician had only recently been engaged to attend her, knew nothing of her previous history, and had no cause to suspect anything abnormal. He examined her in labor, heard the fetal heart very distinctly, found a slightly tinged discharge, the cervix soft, the os rigid and not dilatable, the pains short, sharp, exasperating. The pains proving ineffectual, he gave an anodyne for relief, as he regarded the attack merely a false alarm. By degrees the pains ceased and did not return.

When seen by me the patient, an undersized brunette, of healthy family, was in the kitchen attending to her household duties. She was 33 years old; married eight years; Ipara; the last child born five years ago; no abortions. Previous to her pregnancy her health had been good, her menses regular, the last period April 23, 1896.

She failed to "come round" in May, which so upset her plans, that she consulted a "doctor" who dilated the womb on June 13th. The attempted abortion caused the loss of a few drops of blood, but was followed by no further consequence. On June 23d, she was lying on the sofa. Suddenly she was seized with a most violent pain in the abdomen, fell to the floor and fainted. When she returned to consciousness she could not get up, but was carried to bed, and was confined for two weeks with supposed peritonitis. She remained weak all through the summer and fall. She did not feel life until the latter part of October, though she was told she was pregnant while on a visit in Buffalo late in August. She has never felt much motion. Since the spurious labor, she has positively diminished in size.

The contour and size of the abdomen correspond to an eight months' gestation. The enlargement consists of a large, smooth, round tumor filling the abdomen, except low down in the left hypogastrium where it crowds a smaller, harder tumor to be felt from the point of contact above the pubes to the extreme left in the iliac fossa. Fetal parts cannot be made out. There is no fluctuation. There are no movements, contractions, or fetal heart sounds. The cervix is soft, the external os admits the end of the finger, but the internal os is dense, will not admit of dilatation by the finger. A careful bimanual (repeated on different days), enables me to recognize the smaller tumor as the uterus, elongated and pushed to the extreme left by the larger tumor. The posterior vaginal vault is slightly bulged down, convex, filled with a doughy, tender, immovable mass.

The diagnosis of ectopic pregnancy originating in the right-tube, and of a dead fetus was foreshadowed by the history, and confirmed by the physical examination. It was decided to watch the patient and await indications for interference. On the eve of February 20th, Dr. F. was

called. The woman had felt chilly all day and had severe pain in the abdomen. Her temperature was 100.5°; pulse ninety; abdomen quite tender, especially about the umbilicus. She was removed to the Cleveland General Hospital the following morning. The evening temperature was again 100.5°; pulse ninety-eight; tenderness and pain constant. Operation set for the 22d.

Operation February 22d. Present: Drs. Feil, N. Stone Scott, Towslee, Bernstein and several private students. Anesthetic, chloroform. After the patient was anesthetized, the sound was introduced into the uterus. It entered five inches to the fundus in the direction of the long axis of the smaller tumor. The incision was median from the umbilicus downward, afterwards extended upward about three inches. The parietal peritoneum was much thickened and dark in color, not adherent to visceral contents. The gestation sac now presented. Across the upper part of the sac, which reached nearly to the liver, lay the infolded omentum. The latter was attached to the sac by recent adhesions. Upon gently loosening these the skin of the fetus became visible through the opening in the sac that had been plugged by the omentum. The loops of intestine surrounding the opening in the sac were intensely red. The opening was extended downward by an incision through the sac wall, disclosing the somewhat macerated, female fetus. The breech presented; the back of the child to the abdomen of the mother. The child was delivered; the funis clamped and cut. There was not a drop of amniotic fluid either in the sac or in the abdominal cavity. The amnion formed the innerlining of the sac. The bounderies of the gestation sac were now examined. It crowded the elongated uterus far to the left. It extended from the inner border of the left broad ligament, occupied the entire right pelvis and enclosed the lower abdomen forming a dome over the pelvic cavity. Above it was covered by adherent intestines. The lower anterior wall was formed

of uterus and broad ligament. The sac wall, except where the posterior surface of the uterus and of the broad ligament complemented it, was composed of organized lymph, its thinner portions readily breaking down. The intestinal adhesions were now relieved with the intention of extirpating the entire sac. There was no difficulty until the sigmoid flexure was reached. This was so intimately connected that to continue would be to risk gangrene of the gut. Extirpation was therefore abandoned. Behind and below the sac, adherent to the bottom of the recto-vaginal pouch was a mass as large as an orange, which on enucleation proved to be an organized blood clot. The placenta was attached within the anterior portion of the sac to the right margin and right posterior surface of the uterus. The detachment of the placenta was begun at the bottom of the sac and was quickly accomplished. Tufts of placental tissue and shreds of membrane were left in the sac. The hemorrhage was not at first severe and was controlled by a firm pack of hot gauze sponges. While stitching the sac wall to the abdominal incision, there was noticed a rapid bleeding through the pack. The sac was emptied and repacked, but the bleeding went furiously on. The left broad ligament was clamped. The tissues to the right of the sac were also clamped. The sac was repacked The hemorrhage was now under control. Meanwhile my assistants had lowered the head of the blanched and all but pulseless patient, and made an intravenous transfusion of eight ounces of normal salt solution. The left ovarian artery was now ligated. The right ovarian and the uterines could not be reached. The clamps were removed, the edges of the sac were stiched to the parietal incision and as there was no bleeding, the gauze packs were left undisturbed in the gestation sac. The vagina was firmly tamponed and a T bandage attached to the abdominal binder. The operation had lasted seventy-five minutes. The

following are the essential features of the post-operative history.

February 23d. Patient has rallied nicely from the shock.

February 24th. Symptoms of sepsis. Pulse 130–140. Abdomen much distended. Remove packing, discharge very offensive.

February 25th. Had a poor night. Restless; pulse 144. Vomited once, a dark fluid. Remove shreds of membrane and small pieces of placenta. Discharge from sac still very offensive.

February 26th. Pulse 126. Abdomen still much distended, but wound not offensive.

March 7. Has been steadily improving, but temperature varies from 100° to 101°. Remove a gauze sponge from the bottom of the sac that had been overlooked at the time the others were removed. From this time on convalescence was uneventful. She was kept in bed seven weeks to avoid a strain on ventral cicatrix, and left the hospital in excellent condition April 18th. On May 6th she menstruated. There was no pain. The menses were scant and lasted two days.

The fetus was twenty inches long and weighed six and one-half pounds. Its surface was macerated, the epidermis peeling off in larges flakes. The bones of the skull were loose and flabby; the cranial contents were soft, fluctuating, as is usual in a macerated fetus. There was no deformity. An X-ray was taken by Dr. Scott.

Cases of extra uterine pregnancy gone to term are not plentiful. With better training in early diagnosis, and with early removal of the products of gestation, such cases will become less frequent than at present. "During the hurry and dread of a critical operation," as Parry graphically expresses it, some of the details of the case here recorded were not noted, much to our regret. Sufficient data are at

hand, however, to warrant the conclusion that our case is one of very rare occurrence and of unusual interest.

The attempted abortion deserves but a passing notice. It had no bearing on the subsequent history. It is evident that the right tube ruptured when the patient was two months pregnant. That the rupture was intra-peritoneal, is proven by the organized blood clot adherent in the recto-vaginal pouch. Not until after spurious labor were there any symptoms of secondary rupture. "Cases of primary intra-peritoneal rupture are almost uniformly fatal, either from hemorrhage, or subsequent suppuration of the sac and peritonitis."* In our case the intra-peritoneal homorrhage did not prove fatal, nor did suppuration take place. The uninjured ovum, containing a living fetus, was partly or wholly expelled from the ruptured tube leaving the placenta in the tube. The ovum continued its development within the abdomen, surrounded by exsudate and blood serum. The gestation sac thus formed attachments to the blood clot anchored below, and to the intestines above, while the placenta continued its growth close to the uterus. The fetal membranes and organized lymph formed the only envelope of the fetus above the pelvic brim. After the spurious labor the fetus died, and the amniotic fluid was absorbed; the patient herself noted her diminution in size. There was a final rupture of the upper anterior sac wall a few days previous to operation, causing a localized peritonitis, which gave the direct indication for interference.

According to † Webster's classification our case is one of "Tubo-peritoneal gestation, in which escape of the foetus in the membranes takes place into the peritoneal cavity, the placenta remaining in the tube, and development continuing." Webster further says: "The first undoubted case of such a form of ectopic gestation was described by

*Tait, "Diseases of Women and Abdominal Surgery." Vol. 1, p. 443.

† "Ectopic Pregnancy," p. 53.

me in a monograph published in 1892. Several of the older writers, and also recent ones, e. g., Kuster, Werth, and Berry Hart thought this form possible, while others denied its possibility, believing that rupture of the tube into the peritoneal cavity meant death to the mother, unless she were operated on."

Our case sustains the broad view of Tait as against the narrow opinion of Bland Sutton. The old theory of abdominal pregnancy, that it is caused by the development of an impregnated ovum dropped into the peritoneal cavity has been generally abandoned. It is now believed that "*all forms of extra-uterine gestation pass their primary stages in the Fallopian tube.*"‡ Tait's present explanation of the abdominal variety under consideration is to the effect that, "what have been called abdominal pregnancies are clearly exceptional cases where primary tubal rupture at the end of the third month has not proved fatal; where the extended placenta has made for itself visceral attachments wherever it has touched; or where secondary rupture of a broad ligament cyst has converted an extra-peritoneal ectopic gestation into one within the peritoneal cavity."§ Sutton || dissents as follows: "This view (of Tait) I cannot bring myself to accept. I am of opinion that these so-called abdominal pregnancies are primary tubal; gradually the tube opens out into the broad ligament, and as it progresses to term the walls of the gestation sac rupture, and the foetus escapes into the peritoneal cavity, as in the remarkable case recorded by Jessop." In other words Sutton believes that all such pregnancies have continued their development within the broad ligament until late in the gestation, when rupture of the broad ligament allowed the escape of the fetus into the abdominal cavity.

‡ J. Bland Sutton. "Surgical Diseases of the Ovaries and Fallopian Tubes." p. 344.

§ "Lectures on Ectopic Gestation," 1888, p. 13.

|| Op. Cit., p. 345.

The cases of Jessop, Champneys and Taylor, cited by Sutton in support of his views, differ in this essential from our own, that the foetus lay free among the intestines in the abdominal cavity without any membranous envelop; the foetus having but recently escaped from the gestation sac. The gestation sac in our case was not broad ligament, but the membranes of the ovum fortified by organized exsudate. The fetus was not free among the intestines, but was enclosed within the gestation sac.

Dr. J. F. BALDWIN, Columbus: A case was sent into the Protestant Hospital, of Columbus, some two years ago, that is of interest as bearing on this question. During my absence from the city a woman was brought in moribund from peritonitis. The previous history was entirely negative, but the peritonitis was very evident. She died a few hours later. At the post-mortem the uterus and the appendages were found perfectly normal, but in Douglas's cul-de-sac was a ruptured gestation sac, and a fetus was lying in the cul-de-sac in a mass of blood. Now to say that in a case like this we had primarily a tubal pregnancy, and that the fetus and its membranes were expelled from this tube, dropped into Douglas's cul-de-sac and there contracted fresh adhesions, is clearly a begging of the question. There was nothing in the appearance of the tubes to indicate any such an occurrance. It looked like a case of primary abdominal pregnancy, as if the ovum itself had simply, after fecundation, dropped into the cul-de-sac, contracted adhesions and gone on developing for ten or twelve weeks.

DR. ROSENWASSER: I would suggest to Dr. Baldwin that it could just as easily have been a case of tubal abortion. In the meantime the tube might have completely recovered from the pregnancy, before the Doctor had an opportunity to perform the autopsy. That is the usual case in these cases. The impregnated ovum could be discharged from the abdominal end of the tube into the abdominal cavity, fall down into the cul-de-sac of Douglas, form attachments and afterwards undergo rupture. Thus we might explain the case without going out of the theories at present usually accepted.

DR. BALDWIN: The question as I understand it is, do we have original, primary abdominal pregnancy? If every case in which such a pregnancy is found at the autopsy is to be explained as having had its origin in a tubal pregnancy when nothing in the condition of either tube warrants such an inference, the advocates of this explanation are simply begging the question and placing it outside of all discussion.

DR. W. J. MEANS, Columbus. I have been very much interested in the paper read by Dr. Rosenwasser. The case reported is almost identical with one that I operated last December. The history of my case indicated a gestation of sixteen months. The lady ceased to menstruate in May, 1895. Three months later she had an attack of severe pains that made her apprehensive of a mis-carriage; after this, she continued to increase in size similar to a normal pregnancy; she went on to full term, and at the expected time sent for her physician thinking she was in labor; the pains were regular and in every way significant of coming labor, but after a few hours ceased, and from that time on she had no further trouble, and remained about the same size.

Several physicians were consulted, and various opinions given her as to the cause of the enlargment. She was brought to me in December. I examined her carefully and was satisfied that the case was one of ectopic pregnancy. The following day I operated and removed a foetus, fully developed, weighing seven pounds. There was slight maceration of the integument, and degeneration of the appendages, the amniotic fluid was thick and muddy. There had been some peritonitis, probably occurring about the third month, at the time that she suffered from the pains. The intestines were adhered very closely to the tumor, and required careful dissection to separate them.

After removing the child I made a complete hysterectomy, feeling it was the safest procedure. The patient made a very quick recovery, leaving the hospital in three weeks from the date of operation and has enjoyed good health ever since.

It is probable that in both cases there was a rupture of the fallopian tube about the time the patients were experiencing the acute abdominal pains. These cases present some interesting points both physiological and pathological,

which have been ably discussed by the doctor. That the impregnated ovum can receive proper nourishment for its development outside of the womb is an established fact; where the impregnation takes place is not so well understood.

CHAPTER VII.

PAINFUL MENSTRUATION—CAUSE AND TREATMENT.

BY

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Menstrual pain is not a disease; hence its pathology is constantly varying as its cause. If we rightly interpret menstrual pain as one symptom pointing to a pathological condition we may reasonably hope to effect a cure. If we treat it as a *disease* we can but fail. The physiology of menstruation is so closely linked with the pathology of the diseases causing menstrual pain that if we would have a clear idea of the one we must have a thorough knowledge of the other. The most reliable study of the physiology of menstruation is that of Walter Heape. He made a careful study of the process in monkeys, by microscopical preparations taken at different stages of the menstrual cycle. As a result of his investigations he divides the monthly history of the uterus into four stages: First, rest; Second, growth; Third, degeneration; Fourth, recuperation. During the period of rest the uterine epithelium consists of a single layer of cubical or columnar cells with round nuclei; the outer edge of the section sharply defined, the inner edge protoplasm continuous with the protoplasm of the stroma net work below, the epethelium being continous with that of the glands which rest on a basis membrane and have no sheath. The stroma has round nuclei embedded in a continous net work of protoplasm with very fine deli-

cate processes. During the period of growth there is an increase in the number of stroma-nuclei by amiaobia division and fragmentation causing swelling or hyper-plasia of the upper third of mucosa. The nuclei become fusiform. The deeper portion of stroma undergoes no change, except that the blood vessels enlarge. There is swelling of interglandular tissue while uterine epithelium and glands are very little altered; later the dense layer of nuclei becomes less dense owing to swelling of stroma and stretching of epithelium covering it. The blood vessels below epithelium undergo hyper-plasia. The swelling of stroma increases the thickness of mucosa and widens the glands. The hyperplasia of vessels is concurrent with that of stroma. Many of stroma nuclei are reduced in size. During the period of degeneration he found simple hypertrophy of uterine epithelium, stroma, and walls of blood vessels, followed by amyloid degeneration of superficial layers of mucosa, where the dilated and congested capillaries break down and blood is extravasated. There is marked increase in number of leucocytes which collect in the dilated capillaries on the surface. There is no migration of leucocytes and no diapedesis of red cells, but where ever a vessel ruptures the leucocytes and red cells are both swept out into surrounding stroma. The extravasated blood collects into lacunae within the stroma, these gradually extend themselves, displace the intervening stroma and lie below epithelium. The pressure and obstruction thus produced results in breaking down the superficial dilated capillaries but the pressure being superficial there is no change in deeper portions of mucosa in which neither leucocytes nor red cells are found.

The free leucocytes and stroma cells are now seen to be degenerating. The uterine epithelium shrivels up, the lacunae grow larger and because of rupture of degenerated epithelium the blood is poured into the uterine cavity.

When these lacunae are about a gland, the entire gland is washed away when rupture occurs. When these vessels rupture there are seen large colonies of leucocytes which cling to torn edge of vessel walls. Multiplication of nuclei in leucocytes is now quite active although the leucocytes themselves do not seem to divide. Denudation is now quite complete. All the uterine epithelium, portions of gland and sometimes whole glands and sometimes even a portion of stroma layer is lost or washed away in the flood. This leaves a ragged surface with here and there masses of extravasated blood. The deep layers of muccsa are not affected.

The last stage is that of recuperation or rebuilding in which the epithelium is reformed beginning in places from the torn edges and in other places resulting from transformation of the stroma cells. New capillaries are formed, new blood vessels, and by the infolding of epithelium new glands. The extravasated blood is rapidly taken up by formation of new cells and returned to circulation.

By this study we can readily see that the process of menstruation is one which if interrupted at any stage must necessarily involve a disadvantageous reaction upon the patient.

With this physiological study before us and in view of the various pathological conditions giving rise to menstrual pain it has seemed that a classification with reference to pathological cause would be an improvement upon the commonly accepted one. The causes of menstrual pain may be classified as follows.

- Pelvic
  - Uterine
    - Displacements.
    - Infantile uterus.
    - Metritis.
    - Superinvolution.
    - Uterine fibroids.
  - Intra-uterine
    - Endometritis.
    - Uterine polypus.
    - Submucus fibroid.
  - Ovarian
    - Chronic ovaritis.
    - Prolapse of ovary.
  - Tubal
    - Septic salpingitis,
    - Catarrhal salpingitis.
- Extra-pelvic
  - Neurasthenia.
  - Anæmia.
  - Chlorosis.

I have classified the lesions or conditions giving rise to menstrual pain as pelvic and extra-pelvic because many cases in which the pain is agonizing, present absolutely normal pelves. These are the cases in which everything depends upon care and patience and they are of such import as to merit consideration apart from those which have a pelvic cause.

Of the pelvic causes the first, displacement, is of least import. A displacement of uterus does not itself give rise to menstrual pain. The old theory of obstruction being untenable.

The pain being, in these cases due to the resulting inflammation of the uterus, tubes or ovaries, or if it be an old displacement we may have adhesions. The cure of these cases depends of course upon the correction or removal of the pathological lesion causing it, as in fact it will in all cases ; but I would emphasize, *the displacement, while a* primary, is yet the smallest factor in the case.

In infantile uterus the entire effort at preparation of mucosa for fecundation and menstruation is abortive, in many cases menstruation never occurs and when it does is not a free or natural effort. It is an attempt on the part of nature to prepare an organ for a function to the fulfillment of which it is totally inadequate. First, the mucosa is only partially developed; second the stroma of the

deeper layer of the mucosa and that of the superficial layer are one and in almost embryonic condition. The only cure is to be found in such measures as will develop the uterus (an almost hopeless undertaking) or in the removal of the tubes and ovaries.

In metritis we have a prolific cause, the explanation is first because of irritation of uterine ganglia, causing expulsive contractions; second, pressure upon pelvic vessels and sympathetic; third hyperplasia and consequent obstruction of vessels in deeper portion of mucosa; which prevents leucocytes reaching superficial portion, retards the amyloid degeneration in superficial mucosa and results in more or less destruction of the mucosa. This I believe to be the true cause of that distressing condition known as membranous dysmenorrhea, only in these cases the results are all extreme. In endometritis we have predominating, a glandular inflammation, the glands enlarge, crowd upon each other, press the superficial layer into a smaller space, obstruct the superficial capillaiers and retard amyloid or hyaline degeneration, the capillaries in the stroma become congested, rupture, pour out their blood, form these lacunae and literally tear the epithelium from its moorings. This is probably the condition in which the older writers thought there was some obstruction in cervix and because dilation brought relief gave it the name of "obstructive dysmenorrhea." In these cases due to metritis or endometritis no permanent benefit can be expected from any one method of treatment. The local condition must be believed by curettement or in some cases by judicious local treatment; and the general condition demands most careful attention. More harm is done those women by tinkering, (or inefficient local treatment) than by letting them alone. In the majority of cases, the curette; two weeks in bed, general tonics and the correction of constipation will accomplish a cure; when local applications may, and often do result in placing the case beyond hope of relief by simple measures.

In superinvolution (fortunately a rare condition) the suffering is caused by constriction of blood vessels, compression of uterine ganglia, and irritation of pelvic sympathetic, all due to transformation of muscular into fibrous tissue, and consequent atrophy of vessel walls. Electricity and if possible another pregnancy will bring relief.

Uterine fibroids and uterine polypi cause menstrual pain by mechanical obstruction of the pelvic vessels and compression of pelvic nerves. The cure lies in their removal or the artificial menopause by removal of tubes and ovaries.

Salpingitis is a fruitful source of menstrual pain. In the majority of these cases we have simply the result of a neglected endometritis, *i. e.* the inflammation has extended from the uterus to the tubes. They are suppurative or non-suppurative. The suppurative, although the most dangerous to life, does not give rise to severe menstrual pain until adhesions have formed as a result of peritonitis. That form which is an extension of a catarrhal endometritis results in early occlusion of the tubes, hyperplasia of both tubal mucosa and muscular wall of tube, venous engorgement of tubes and ovaries and a varicose condition of the ovarian veins. It is in this condition we find the most pronounced pre-menstrual pain, which is relieved in a few hours after the flow is established. Here the preceding and accompanying endometritis is an important factor. The timely use of the curette will prove our best aid. Let me here urge the necessity of determining the absence of pus-tubes before resorting to the curette, for the operation when we have pus-tubes is fraught with greater danger than is the removal of the tubes. There is a form of inflammation of the Fallopian tubes which occurs as a sequel to the exanthematic diseases. It is usually bilateral and is nearly always complicated by peritonitic adhesions. The pain is severe at menstrual epochs and resists all forms of local or general treatment.

The consideration of those cases which have an ovarian cause will involve the relation between ovulation and menstruation; a subject too great to be discussed in a short paper. For our purpose it is enough to remember that each month the uterine mucosa develops preparatory to the reception of a fructified ovum, and when that ovum is not impregnated, degeneration with rupture of superficial vessels and denudation result in menstruation. Intermenstrual and premenstrual pain, can always be attributed to the tubes or ovaries. When to the ovaries, we must determine whether it be hyperæmia or ovaritis. Ovarian hyperæmea is a common cause of menstrual pain in young girls and in vigorous widows. Its cause being excitement and ungratified sexual desire it is apparent that its treatment should be such as to direct the patient's thoughts from the genital organs. A change in the social and domestic habits is of prime importance; the importance of relief is emphasized by the fact that if unrelieved this soon results in chronic ovaritis, with hyperplasia, increase of fibrous tissue and complete destruction of the ovary. In the latter condition the pain becomes more severe, more prolonged and for its cure involves the sacrifice of the organ. It matters very little whether the form be cystic, interstitial or hyperplastic, except that the pain in interstitial ovaritis is most severe while in the cystic we are more likely to find prolonged or profuse flowing and in many cases intermenstrual hemorrhage. The treatment of any form of chronic ovaritis is too often disappointing and requires for permanent cure the extirpation of the diseased ovaries.

In all these cases the temptation to give opium is great and should be religiously resisted; for, so sure as we give it, we will make an opium habitue of our patient. In prolapse of the ovary the pain is due to the resulting inflammation of tubes and ovaries with the consequent congestion of the entire pelvic contents. There is no method of mechanical treatment which will correct the displacement. Two opera-

tive procedures are available. First, if the ovary be not too much affected we can lift it up and secure it by shortening the utero-ovarian ligament, or stitch it to the broad ligament. Second, if the ovaries are diseased beyond repair we can remove them. The power of repair is so great that I am inclined to think we can save a very large percentage.

There is a class of cases in which no disease of the pelvic organs can be detected, and yet the suffering is as severe as it is in those in whom inflammatory trouble exists. Neurasthenics, in whom there seems to be a constant tendency to explosions of all sorts; patients who are anaemic or chlorotic. The occurrence of menstrual pain in these subjects is readily appreciated if we keep in mind the utero-ovarian nerve supply and the physiology of the sympathetic. The nerve supply of the uterus Fallopian tubes and ovaries is largely from the sympathetic, with a few fibres from the 2, 3 & 4 sacral. The sympathetic fibres are from the inferior hypogastric and the spermatic plexuses. The hypogastric is a branch of the aortic plexus, which is derived from the semilunar ganglion and renal plexus on each side. If we remember that these sympathetic centres supply branches to all the abdominal viscera and then keep in mind the fact that irritation or stimulation of a sympathetic nerve causes contraction of vessels, lower temperature, diminished nutrition, and increased tissue waste in the part supplied by it, the increased tissue waste causing increase of carbonic acid gas in the blood which increases the irritation, it is not hard to understand how a neurosis may have, as one of its symytoms, painful menstruation. Particularly is this true if we keep before us the facts of the normal menstrual process; viz. that there is first, an increase of cell growth; second, multiplication of stroma nuclei and hyperplasia of superficial mucosa; third, widening of interglandular and intervascular spaces from hyperplasia; fourth, occlusion of capillaries, degeneration and rupture of smaller vessels, and finally complete denudation of uterine mucosa. Neither is

it hard to understand how these physiological processes may become abortive as a result of malnutrition, in anaemia and chlorosis. Great care is necessary in these cases that we exclude local organic disease, for if there be no endometritis or other evident local inflammation occurring in these neurotic and haemic cases I do not believe we ever accomplish any good by local treatment, and they are certainly not to be operated upon. That there are cases of nervous disease dependent upon pelvic trouble we all know. The failure to discriminate between those in which the pelvic disease is the cause of the nervous symptoms, and those in which the neurosis is the primary affection, has done much to retard the acceptance of operative assistance, by alienists. I would emphasize the statement, that operative measures cannot be expected to relieve nervous symptoms except when adopted for the removal of distinctly diseased organs to the condition of which the nervous symptoms may justly be ascribed. On the other hand I have seen some marked neurotic conditions relieved without further treatment by the removal of the diseased ovaries and tubes, or the plastic repair of an enlarged and indurated cervix.

Resume.

First: painful menstruation is not a disease, but a symptom which may be found in many diseases.

Second: those classifications which place it as a disease are misleading and should be discarded from our literature.

Third: the physiology of menstruation, a thorough knowledge of pelvic pathology and a broad, careful habit of study and thorough care taking are necessary in order that menstrual pain be rightly construed.

Fourth: many of the cases due to inflammation of uterus, tubes or ovaries may be cured in early stages by simple means, whereas neglect places them in a position demanding serious operative treatment.

Fifth: painful menstruation in a sterile patient is strong evidence that there is tubal inflammation with occlusion of tubes.

Sixth: operative procedures should be reserved for those cases in which there is positive pathological indication, neurotic and haemic cases being treated by other and more appropriate methods.

Seventh: as a symptom, menstrual pain is often of such grave import that it should always receive the most painstaking study. If this be our rule many a case will be cured without operation.

PELVIMETRY; ITS VALUE IN OBSTETRICS

BY

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The value of Pelvimetry is a subject which interests the general practitioner as well as specialist. It is he who sees the most obstetrical work and it lies in his power to detect the existence of pelvic deformities, before it is too late to prevent the serious results which so frequently occur when they are present.

This is not a new subject, though, as one writer has said, "It is still in its infancy in America." Until the close of the seventeenth century, obstructions to labor arising from the pelvis were thought to be due to its failure to expand. Heinrich von Deventer first showed the falsity of this theory in 1701 by demonstrating the existence of anomalies of the pelvis. In 1718 Pierre Dionis showed the relation between rachitis and deformities of the pelvis. In about 1756 Smellie estimated the conjugate diameter, and in 1775 Baudelocque measured it with the pelvimeter bearing his name. Among the many who have added to the

knowledge of the subject, Michælis in 1851 and Litzmann in 1861 contributed the most towards showing its practical value.

One of the serious drawbacks to the general practice of pelvimetry has been the want of an instrument which will span sufficiently, be cheap and easily carried. Many models have been devised which are suitable for hospital but impracticable for general use. I have found Martin's a valuable instrument. Collyer's is smaller and cheaper; I fear, however, it is not so accurate. Harris's I imagine is valuable, though I have not seen it. For externo-internal measurements Skutsch of Jena and Hirst of Philadelphia, have devised instruments, but they are only practicable for hospital work. There is still room for a pelvimeter which will meet all requirements.

Probably the most general reason given for not measuring pelves is, that but very few American women have deformities. If this is true, we still have thousands of women from countries in which according to Michælis, Litzmann and Schroeder, deformities are found in fourteen per cent of the women confined. We are not, however, in a position to say that but few American women have deformities, for enough pelves have not been measured to prove such claims, and when statistics have been collected the per cent. does not fall very far behind that of other countries.

That we may know the real significance of measurements in a given case, we must have some standard with which to compare them. This is usually given as follows: Between the iliac crests 28 C. M., between the iliac spines 25 C. M., external conjugate 20 C. M., conjugata diagonalis 11.5 C. M., and conjugata vera 10 C. M. What deviation from these shall constitute a deformity is a question about which opinions differ, but we will be safe in adopting the German standard that a pelvis with an external conjugate of 18 C. M. and a true conjugate of 9½ C. M. is contracted.

Again, we must have a common method of taking the measurements. The first to be taken and frequently the only ones needed, are the distances between the iliac crests, between the anterior superior iliac spines, and the external conjugate. For the first two, the patient should lie as quietly as possible on her back, with legs extended and close together. The points of the pelvimeter are placed against the external surface of the spines at about the insertion of the sartorius muscle, and the distance between them noted. They are then moved back till the widest point between the crests is found, measuring from the external border. If the distance between the spines is greater than between the crests, place the points of the pelvimeter about two inches back from the spines. If the points of the pelvimeter are placed on the spines, they should be placed on the crests also. This will not be as exact however as when applied to the external borders, for the inner borders or center of the crests are not easily accessible.

For the external conjugate, the patient lies on her side with legs flexed. One point of the pelvimeter is placed in the depression beneath the spine of the last lumbar vertebra and the other on the center of the upper border of the symphysis pubis. Only slight pressure is needed and there should be no pain. If the proper relation between these measurements exists, it is not necessary to look further. If not, the internal conjugate must be taken. For this the patient should lie across the bed with her hips slightly raised. Introducing the first and second finger we try to reach the promotory of the sacrum. If successful, the end of the finger is placed against it, the hand raised till it touches the lower border of the symphysis pubis, and the point of contact marked with a finger of the other hand. The distance is measured with the pelvimeter. This is the conjugata diagonalis and the vera is estimated by deducting $1\frac{1}{2}$ to 2 C. M., according to the width and

angle of inclination of the pubic bone. In fleshy patients from one-half centimeter for the transverse to two centimeters for the anterior-posterior diameter are deducted. In exceptional cases where one of the rarer deformities is present, other measurements, internal and external, will be necessary to determine the exact condition. These cannot be discussed now.

What can be learned from the three external measurements? As has been said their significance lies in the relation they hold to each other. If the distance between the spines approaches or exceeds that between the crests, and the external conjugate is shortened, a rachitically flattened pelvis is probably present. An example of this is seen in the following case:

The patient was 32, this being her fifth labor. The first four, one of which was a twin pregnancy, were terminated with forceps. The external pelvic measurements were:

Iliac crests, 25½ C. M.
Iliac spines, 26½ C. M.
External conjugate, 18 C. M.

All the diameters are shortened and the distance between the spines greater than between the crests. The case was a slightly flattened rachitic pelvis. Treatment was expectant and after 13 hours a living child was born without instruments.

The following is a generally contracted rachitic pelvis seen in a deformed woman suffering from scoliosis of the dorsal vertebrae and paralysis of both legs due to injury after birth.

Her first two pregnancies were terminated by producing premature labor. I saw her only a day or so before the expected time of confinement and decided to wait for developments. Pelvic measurements were:

Iliac crests, 20 C. M.
Iliac spines, 19½ C. M.
External conjugate, 14½ C. M.
Diagonal conjugate, 10½ C. M.
True conjugate, 9 C. M.

All the diameters are less than normal and do not have the proper relation to each other. Treatment was expectant, and after a labor of twenty-four hours she delivered herself of a 6¾ pound child.

Where the transverse diameters are normal or longer than the standard, and the external conjugate is considerably lessened, we probably have a simple flat pelvis. The true conjugate of these usually ranges from 8 to 9½ C. M., the majority of the cases being only slightly flattened.

The following two cases illustrate the two extremes:

The first was a primipara of fairly heavy build.

External measurements were:

Iliac crests, 31½ C. M.
Iliac spines, 29½ C. M.
External conjugate, 19½ C. M.

Diagonal conjugate could not be accurately estimated, as the head was at the inlet. Deducting ½ C. M. from the transverse and 1 C. M. from the conjugate for obesity, the measurements are 31 C. M., 29 C. M., and 18½ C. M. and are far from having the proper relation to each other. I saw the case with Dr. H. C. Long to consider the question of delivering with forceps. The patient had been in labor forty-eight hours when I saw her and, though tired out, had a good pulse and normal temperature. The foetal heart was excellent. Morphine to give rest to the mother and help relax the slowly dilating os, resulted as we wished, and a live child was delivered nine hours later without the use of instruments.

The second case had the following measurements:

Iliac crests, 30 C. M.
Iliac spines, 27½ C. M.
External conjugate, 17 C. M.
Diagonal conjugate, 9½ C. M.
True conjugate, 8 C. M.

Here the transverse diameters are increased and the conjugate decreased, characteristic of simple flat pelves. The patient had been in labor twenty-four hours and was in good condition. The foetal heart was also excellent. There was a sudden profuse hemorrhage which placed the mother in a dangerous condition and as subsequent events showed, caused the death of the child. At this time Dr. Robt. Pollock, who had charge of the case, asked me to see her. When I arrived, her condition had been somewhat improved by stimulation. A previous very difficult delivery with high forceps suggested version as the probable treatment. Examination showed the os to be dilated, membranes intact, head movable above the brim and promontory of the sacrum easily felt. Introducing the hand, breaking the membranes and reaching for a foot showed that there was but little space for turning and that the cord was pulseless. This last, as the mother's condition was fair, changed the indications decidedly. The head was perforated and an eight pound child delivered with the cranioclast. The biparital diameter, as near as could be estimated, was 9½ C. M. which would not pass through a conjugate of 8 C. M. The mother made an excellent recovery. I should say perhaps that the external measurements were not taken till the mother was up again.

I might give other examples when expectant treatment was followed by the use of forceps, but these sufficiently illustrate the value of measurements.

An important question is, what is the relation between the size of a woman's pelvis and her stature? While we may find a pelvis with the standard measurements in both tall and short women, there is generally a correspondingly small pelvis in small women. Will the diameters of such a pelvis approach those of the justo minor aequilabiter pelvis, or will their relations to each other be such as to lead to a suspicion of flattening and still be really normal for such a pelvis, offering no obstruction to labor? This is a question which has frequently occurred to me. As a rule opinions are very indefinite as to what these diameters should be. Schroeder is the only I have found to give definitely what the dimensions of a justo minor aequilabiter pelvis should be and places them at three centimeters below the standard. Such a pelvis may be found in a woman of any build. But take a woman of small statute, should we not expect that, instead of the diameters keeping up the relation to each other that the standard do, or instead of their being proportionately smaller, in which case we must class the pelvis with the justo minor aequilabiter pelves, should we not expect that they will show a different relation to each other? I believe this is so, for I have examined many pelves with such diameters, was not able to discover any signs of deformity, and when labor came on there was no obstruction.

Dr. P. A. Harris of Paterson, N. J., has devised a chart representing "Pelves of normal conformation," which, if it stands the test of general use, will answer this question and be of value in determining what the relation of measurements in different sized pelves should be. By it he shows not only that the distance between the crests is three centimeters greater than that between the spines, in the standard measurements, but that when the distance between the crests is 24 C. M. the difference should be 1.8 C. M., and where it is 30 C. M. the difference should be 3.6 C.

M. With this chart when any one of the four measurements is given, the others and their right relation to each other can be obtained. In a reply to a letter of inquiry, Dr. Harris says he has seen no reason to modify the chart. In any case, if a doubt exists as to what the relations between the external measurements really indicate, we must resort to careful internal measurements.

We will find that in some cases of apparent shortening of the external conjugate, there is in reality none. Pershing gives the following table which is a good estimate of the probabilities for conjugates of different lengths:

A diameter of 16 C. M. will give shortening.

16–18 C. M. will probably give shortening.
18–20 C. M. chances are equal.
20–21 C. M. shortening improbable.
21 C. M. or more will be safe.

In all our estimates of probabilities in given pelves, the child's head, which is a most important factor, is an uncertainty. As yet there is no accurate means of estimating its size, but valuable information can be gained from the ease or difficulty with which it is made to enter the brim of the pelvis.

That which interests us the most is the practical worth of pelvimetry. To secure its full value the pelvis of every primipara and of those multiparae, in whom a previous labor has been difficult, must be measured as early as possible before the time of labor. To realize how it can be of value, we must inquire what happens where an asymmetrical pelvis is present and we are ignorant of it. The mother's suffering is prolonged. She is subjected to the dangers of infection and injury from frequent examinations and attempts to deliver. By the time a suspicion that something is wrong arises, and when the cause of obstruction is discovered, she must undergo a severe operation

when her powers of resistance are the lowest. This does not apply alone to Caesarean section or symphyseotomy but as well to high forcep operations, which at best are dangerous, and, in the hands of some, fatal. An early knowledge of the true condition would give an opportunity for some prophylactic measure of a less degree of severity.

But this is not all. The child must have greater consideration than it does. It is remarkable how generally its claims for attention are disregarded. Next to pelvimetry there is no one thing more generally neglected than examination of the foetal heart, this too when it is our only indicator as to whether the labor should be terminated to save the child's life. It is no wonder that statistics show such high foetal mortality during or immediately following birth. In a paper read before the State Paediatrical Society on the "Injuries received by the child during birth," I gave such statistics and the opinions of prominent obstetricians and neurologists that large numbers of cases of cerebral palsy and idiocy in children are due to asphyxia or intracranial hemorrage following protracted labor. Playfair says one in every five cases of slightly contracted pelves will result in a still birth. Lusk quotes statistics showing fifty-three deaths in 407 cases of slightly contracted pelves where birth was spontaneous. Schroeder says fifty per cent. will die where the pelvis is contracted sufficiently to indent the head of the child. Prolapse of the cord is a frequent complication of contracted pelves and is fatal to the child in thirty-seven to fifty-three per cent. of the cases. Such facts, many more of which might be given, demand attention. I do not claim that all protracted labors are due to contracted pelves. I believe though that many more are, than is generally supposed, and especially where the pelvis is only slightly contracted. These last will prove more dangerous to the child than mother. If we wait till a protracted labor, which has exhausted the mother, suggests the cause of delay, it will probably be too late to save the

child, and if it is born alive, in many cases it dies in a few days from the results of the labor.

Clearly our duty is to know *early* whether a contracted pelvis is present or not. If it is, we can treat the case intelligently and according to the extent of contraction. If it is slight, treat expectantly as in the cases reported, and make it a point in every case to frequently examine the foetal heart. If the contraction is more marked, then some prophylactic measure, as producing premature labor or version, can be adopted, or if symphyseotomy or Caesarean section is chosen it can be done when the mother's and child's condition are the best and the mortality will not be as high as now. In the last case reported, a knowledge of the measurements will be a great safe-guard in case of another pregnancy and either premature labor should be produced or symphyseotomy performed.

Pelvimetry is not a "cure all" for obstructions arising from the pelvis. Even though it is known early that a deformity exists unfortunate results will scmetimes follow. These cannot be prevented perhaps. They, however, are simply the exception to prove the rule that the pelvis of every primipara and of those multiparæ in whom there has been a difficult labor should be measured as early as possible before labor begins.

LITERATURE.

Schroeder's Lehrbuch.

American Text-Book of Obstetrics.

Science and Art of Obstetrics by Lusk.

American System of Obstetrics by Hirst.

"Ueber Beckenmessung" by Landerer, Zeitschrift fur Geburtshuelfe and Gynaekologie, 1892, vol. 23, p. 159.

"Die Praktische Verwerthung der Beckenmessung," by Skutsch, Deutsch, Med. Wochenschrift, Leipsig, '90, vol. XVI, p. 257.

"Kurzer Beitrag zur Beckenmessung," by Rumpe, Centralblatt fur Gynaekologie, Leipzig, 1884, vol. VIII, p. 438.

"Pelvimetry" Journal Anatomy and Physiology, London '81, '82, vol. XVI, p. 106.

"Importance of Routine measurements of the Pelvis before Labor," International clinics, Phila., 1895, 4th S. vol. IV, p. 273.

"Pelvimeters and Importance of Pelvimetry as a means of Discovering Irregularities of the Pelvis," by Harris, Annals. Gynaec. and Paidiat. Phila. '94 and '95, vol. VIII, p. 243.

"Observations on Pelvic Contractions," Med. Record, '95, vol. XLVIII, p. 583.

"Methods of measuring Diameters of the Pelvis" Am. J. of Obstetrics, 1883, vol. XVI, p. 190 and 811.

"An Inquiry into the Causes Producing Cerebral Injuries in the Newborn," by J. M. Taylor, Annals. Gynaec. and Paediat. Phila., '91 and '92, vol V., p. 439.

"Mortality of Childbirth," London Lancet, '93, vol. II, p. 9.

THE CONSERVATIVE TREATMENT OF THE MYOMATOUS UTERUS.

BY

HUNTER ROBB, M. D., CLEVELAND, O.

It is a well established fact that all real progress is characterized by a due amount of conservatism. And if this is true for the history of medicine in general, it holds still more pre-eminently in the field of operative surgery. The day has passed, I hope forever, when the removal of ovaries, which are apparently healthy, is considered justifiable unless under the most exceptional circumstances. In general surgery our operations though they may appear to be more daring and in some respects more radical, than

they were ten years ago, are characterized by greater caution, by greater care to avoid extensive loss of blood and by the attempt to preserve for the patient any organ or part of an organ which may still serve its purpose in the human economy.

I think that in gynæcology. perhaps, one of the most striking advances of late years is to be seen in the operative treatment of myomata of the uterus. There are very few of us at present here to-day who have not at some time or other, and more or less frequently, witnessed the removal of the entire uterus or the body of the uterus together with the tubes and ovaries, in operations for the extirpation of myomatous tumors. As with other operations we have evidently gone to extremes, and it is now generally agreed that in many cases such radical measures were entirely unnecessary. I wish, therefore, to-day, to call your attention to the conservative treatment of these cases, by means of which the removal of the new growth or growths may be accomplished and the uterus and ovaries may yet be saved.

Myomatous tumors of the uterus are, as a rule. *simply* lodged in the uterine tissue, and the remaining pathological condition is *simply* one of considerable hypertrophy of the muscular tissue. The removal of a myomatous growth of the uterus might not inaptly be compared to a Cæsarean section, although in the former case the cavity of the uterus is not always opened, and after an abdominal myomectomy the risks attending a subsequent pregnancy are much less than those which may arise when conception occurs after a Cæsarean section. In the case of several large myomatous tumors, the conservative operation in the majority of cases would be more dangerous than a hysteromyomectomy, in view of the fact that the procedure takes more time and in addition we have an increased liability to septic infection. But when we have to deal with not more than four or five tumors of a size not larger than a hen's egg, and particularly if the tumors are not deeply situated

in the uterine tissue, we can with safety in the great majority of instances remove these and leave the uterus behind.

Myomectomy is the simplest of the radical operations for the extirpation of these tumors, and is especially adapted to simple growths which can be readily cut or shelled out of their bed without much injury or loss of uterine tissue. Myomectomy, therefore, is especially indicated for pedunculated and for certain sessile and interstitial growths of the uterus and those of the broad ligament. Several isolated tumors may be dealt with by this operation which is now considered comparatively free from danger, provided only that the rigid observance of the most scientific aseptic technique is carried out and the ligatures and sutures are applied in such a way that hemorrhage is avoided or easily controlled.

For our present purpose myomata may be divided into four classes: (a) Pedunculated; (b) sessile; (c) interstitial; (d) submucous.

In dealing with the pedunculated myomata the abdominal incision is made large enough to allow the tumor with the fundus of the uterus to be drawn out of the wound. Then, while an assistant grasps the pedicle in order to control the hemorrhage, the operator makes a circular or oval incision around the base of the tumor about two or three centimetres from its attachment to the uterus. The flap of muscular tissue thus obtained is now turned down and the tumor is shelled out from around its base. Bleeding vessels are controlled by artery forceps. The freest oozing usually occurs at the periphery or at the center of the pedicle. After the removal of the tumor the flaps are brought together by a series of interrupted sutures strong enough to bear considerable tension. The treatment of the stump has of late years received much attention. It was formerly the custom to suspend it in the lower angle of the abdominal incision. Later operators were in the habit of

dropping the pedicle into the abdomen and employing drainage. Since the dangers accompanying these procedures have been more fully recognized, both have been almost generally discarded. In the majority of cases we drop the pedicle and close the abdomen.

In removing sessile myomata the incision is made further away, as much as five centimeters, from the uterine wall proper.

In the case of a large tumor with a broad base the incision should be made fairly high up on its convexity so that enough tissue may be left to give us abundant flaps. It is always as well to have enough and any redundancy can be easily trimmed away. This point must be especially insisted upon and the possibility of retraction of the flaps must never be forgotten.

Where the tumor is of a considerable size and when the vessels to be cut are of large calibre, a provisional rubber ligature (a piece of rubber tubing or the like) should be tied around the lower part of the uterus in order that the circulation may be controlled, until the tumor has been removed and the sutures have been tied. The ligature is then released and bleeding points, which had before escaped notice, can now be easily detected and controlled by additional ligatures. There is no harm in plunging the needles deep through the uterine tissues. As many as six of these tumors have been excised in this way.

Interstitial tumors may appear as pea-like nodules buried in the uterine wall. At times, however, we may meet with one which forms a mass as big as the uterus of a five months pregnancy. Such tumors are usually encapsulated in a mass of hypertrophied tissue. For the removal of interstitial myomata the incision having been made through the uterine wall down to the tumor, the latter is grasped by an assistant with a pair of stout claw-forceps by means of which the tumor is gradually raised while the operator shells it out of its bed with his fingers or some flat blunt

instrument such as the handle of a scalpel. Here, also, in the case of large tumors the uterine circulation is controlled by means of an elastic ligature applied at the junction of the body and the cervix before the enucleation is begun. In laying the sutures the needle is carried down through the tissues from one side of the incision to the other. Several sutures should be employed and they should be ligated tightly enough to insure good approximation and a complete control of hemorrhage.

Certain forms of myomata generally of the submucous, more rarely of the interstitial variety, can be removed through the vagina. When a submucous myoma, however, has reached the size of a child's head and the cervix is closed and where a portion of a large myomatous mass has been extruded from the cervix leaving the intra-uterine part attached to a broad base which cannot be reached through the vagina, total extirpation through the natural passages is either impossible or contra-indicated. If the extruded portion has sloughed it must be removed, and from ten days to two weeks must be allowed to intervene, before anything further is done, in order to allow time for the formation of a healthy granulating surface. After this, the removal of the other portion may be undertaken through the abdominal walls. To Dr. August Martin of Berlin belongs the credit of inventing this operation.

Before opening the abdomen the danger of septic infection from the uterine cavity must be minimized as far as possible by carrying out the most thorough prophylactic measures. For several days beforehand the patient should be given daily douches of a saturated solution of boric acid, the nozzle being carried as far as possible up into the uterine cavity. Just before the operation the vagina is thoroughly cleansed and the uterine cavity irrigated with a 5 per cent. solution of creoline, and then packed with iodoformized or sterilized gauze. By these means we can to a great extent prevent the escape of any uterine secretions over the wound

surface and into the peritoneal cavity, when the uterus is opened from above. When there is much discharge from the uterus it may be better to delay the operation until its character has been changed by douches and drainage. In this last class of cases when an immediate operation is imperative, the risks accompanying an amputation of the uterus or a complete hysterectomy will be less than those incurred in performing Martin's operation.

Martin's operation is a bloodless one. The steps are as follows:—

1. The vagina and uterine cavity are disinfected and packed with gauze.
2. The abdomen is opened.
3. The uterus is lifted out and laid on a gauze napkin.
4. A rubber ligature is passed round the uterus close to the cervix to control hemorrhage.
5. The uterine cavity is opened and the tumor is shelled out.
6. The uterine wound is brought together by sutures and the uterus is returned to the abdominal cavity.
7. The abdominal incision is closed.

The first incision is made in the linea alba just large enough to permit of the uterus being drawn out through it. A stout pad is placed ready for the uterus to rest upon, and pieces of sterilized gauze are packed closely around its lower wall and well down into the incision. A provisional ligature is placed around the uterus at the junction of the body with the cervix and tied whenever the opening of the uterus gives rise to any considerable amount of hemorrhage. The incision into the uterus is made as a rule in the long axis of the interior wall and may sometimes extend from a point just below the fundus down to the internal os where the peritoneum leaves the bladder and passes over to the anterior surface of the uterus. In making our incision we should seek to avoid the pedicle. It is sometimes dossible to determine its position by palpation and by trying

to slide the wall of the uterus over the tumor. Two or three sweeping strokes with a sharp knife will lay the uterus open from top to bottom. The gauze in the cavity of the uterus is then withdrawn by means of a forceps and a large piece of fresh sterilized gauze having been packed in so that it protects the margins of the incision, the operator holding in his hand a piece of sterilized gauze grasps the tumor and twisting it peels it from its base. The tumor and its contents should never be allowed to come in contact with the edges of the abdominal incision. If the tumor is pedunculated, the pedicle should be cut through at a point several centimeters distant from the uterine wall. Active bleeding is to be controlled by ligating the vessels or by uniting the laps of the stump so that the raw surfaces are compressed.

The incision is closed by means of silk sutures inserted about one centimetre from the margin of the incision. They are to be carried down to, but not into the mucosa. The sutures should be drawn tight enough to bring the margins of the wound snugly together, and at the same time to stop the bleeding and thus exercise a double function. Strangulation of the tissues should be avoided. A few superficial sutures passed to the depth of five or six millimetres may be employed to complete approximation.

If infected material has been carefully excluded, the abdominal cavity will require no cleansing. The cloths supporting the uterus are now removed and the organ is replaced in the pelvic cavity in a position of pronounced anteflection. By this means the intestines are prevented from coming in contact with the uterine wound. In these operations the Trendelenburg position is often employed. Before the abdominal incision is closed the buttocks of the patient are lowered and careful search is made for any bleeding points which need to be secured. The abdominal cavity is then closed and the after-treatment is similar to that of any other abdominal section.

CHAPTER VIII.

SHALL WE OPERATE THROUGH THE UPPER OR LOWER CANALICULUS?

BY

S. C. AYRES, M. D., CINCINNATI, O.

There seems to be quite a diversity of opinion among writers as to which canaliculus it is better to open in operations for dacryocysto–blennorrhœa and strictures of the nasal duct. It is a question with two sides to it, and authors seem to have paired themselves in favor of the upper or lower along lines apparently dictated by their experience. Is the one as good as the other? If so the question is settled in favor of both and honors are easy. Is one better than the other one? If so, which one? If one is better than the other why not know it and settle the question in favor of the better one?

Stellwag says: "To gain entrance to the sac the lower canaliculus is usually slit up. Some, however, prefer the upper. In favor of the latter is the fact that continued probing, as is necessary in the treatment of lachrymal blennorrhœa, by great tension of the inner angle, readily causes cicatricial closure of the inner end of the tube, and it is *most important* to preserve the permeability of the *lower canaliculus* as this acts the principal part in the conduction of tears.

If this be true, why should so skillful an operator overlook this fact and slit the lower canaliculus and illustrate his work accordingly? We give a few specimens from some of the text-books. Meyer: We begin by opening

the inferior lachrymal passage. Schmidt-Rempler: When employing Bowman's Probes it is immaterial whether the upper or the lower canaliculus is used. Schweiger: The lower canaliculus. Noyes: My preference is for the lower. Brudinell, Carter, Juler, Swansey, Berry and Roosa the lower. De Schweinitz describes the operation through the lower, but says either can be used. Norris and Oliver, either upper or lower, but illustrate operation through the lower, Fuchs says that the operation can be performed through either upper or lower but states in sounding through the lower canaliculus the sound must be tilted so as to be turned through *more* than a right angle, but the canaliculus is wider.

Wells says: "I am in the habit of dividing the upper canaliculus with Weber's knife and passing the latter into the sac and freely incising the neck." De Wecker says any treatment adopted should disturb the physiological functions of the tear passages as little as possible. I always prefer to commence with the superior canaliculus, which plays an important part physiologically.

Mr. W. Spencer Watson, in a Brochure on the Anatomy and Diseases of the Lachrymal Passages, says: "In view of the fact that the tears gravitate toward the lower oculo-palpebral sinus, the part performed by the lower punctum is much more important than that of its fellow in the upper lid. Any abnormality of the lower punctum affects the passages of the tears to a much greater extent than similar disturbance of the upper one, and it therefore follows that the consideration of affections of the lower punctum is predominant and its treatment more essential." A few pages farther on in speaking of the operation for chronic dacryocystitis he says, "the lower canaliculus should be laid open by means of the Weber's or Bowman's knife." The statement about the functional value of the lower punctum and his method of operation appear inconsistent. If "any abnormality of the lower punctum affects the passages of the tears to a

much greater extent than a similar disturbance of the upper one," why does he produce this abnormality by slitting the lower canaliculus? A canaliculus that has been slit is never absolutely normal again even if it performs its functions in a quite satisfactory manner.

The mass of authority among the book writers is in favor of slitting the lower canaliculus for strictures of the nasal duct, and lachrymal blennorrhœa. The question as to which is the better one to open is scarcely discussed at all by the authors. It seems to be a settled question in favor of the lower one. It seems to the writer that the

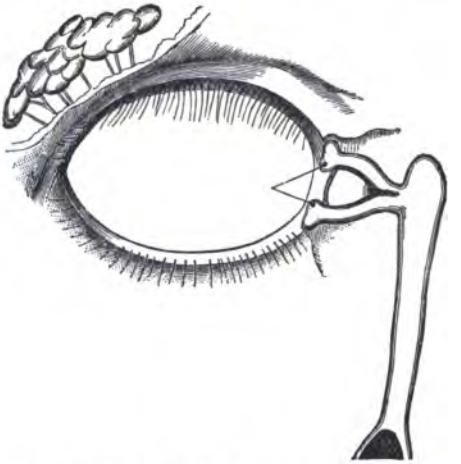

FIG. 1. (After Gray), showing the anatomy of the tear-sac.

question is open to discussion with some strong arguments in favor of slitting the upper canaliculus.

The lower canaliculus is shorter and has a larger caliber than the upper one. It is more easily probed and can be incised with much less difficulty than the upper one. In making the ordinary stricture operation, after slitting the canaliculus the probe is introduced until it comes in contact with the bony wall of the tear sac and it is then deviated at

least 90° and sometimes more, before it can be passed down into the duct. (See Fig. 2.) This necessarily causes considerable twisting of the tissues around the probe, especially if a Bowman's probe No. 6 or No. 8 is used. This makes it difficult to pass the probe and increases the pain. If in order to admit the probe the mouth of the sac is notched below it is apt to be followed by cicatrization afterwards

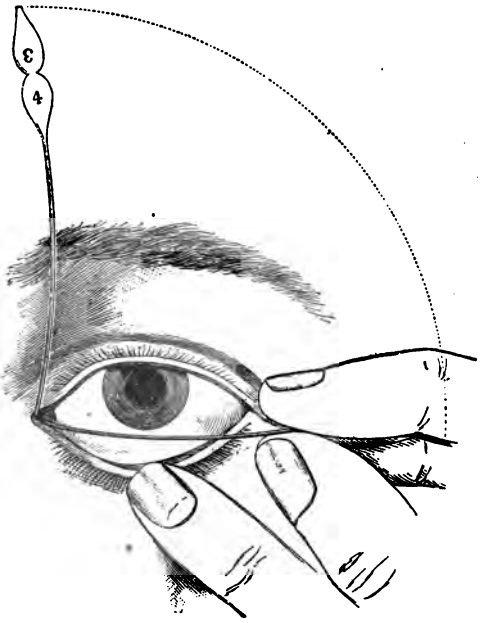

FIG. 2. After Norris and Oliver, showing the sweep of the probe when introduced into the lower canaliculus.

which will interfere with its caliber. But the most important reason is that the lower canaliculus is more important for drainage than the upper one. It is larger than the upper one because it has more work to do. The constant winking of the upper lid sweeps the mucus on the surface of the cornea directly into the mouth of the lower canal.

Let the lower canaliculus be obstructed or averted, and how quickly does the eye suffer.

The same effects would not follow a similar disturbance in the upper canaliculus. In the operation through the upper punctum the slitting of the canaliculus is probably slightly more difficult than that of the lower. The tubercle of the punctum is not so prominent and when the lid is on the stretch by drawing it tense against the upper rim of the orbit, it is not so firm as the lower one when it is drawn tightly over the lower rim of the orbit. But this differ-

FIG. 3. Showing the probe introduced into the upper canaliculus. The sweep of the probe is nearly half as great as in Fig. 2, and the twisting of the tissues relatively less.

ence is insignificant and should not be considered in comparison with its advantages. When the upper lid is drawn tense for the purpose of slitting the canaliculus it makes about an angle of 45° with the tear duct. So that the probe in entering the tear sac does not have to be turned more than 45° to enable the operator to push it down into the

duct. (See Fig. 3.). It does not have to be raised more than half as far as when the operation is made through the lower canal. Another advantage is that there is not nearly so much twisting of the tissues around the probe as in the lower operation, and the probe glides down more smoothly.

In addition to this, when it is desirable to notch the mouth of the tear sac the knife, as soon as it has slit the canaliculus, can be elevated and pushed directly down into the sac and its neck enlarged before the knife is withdrawn. This will facilitate the passage of the probe very much. The secret of an easy and successful tear sac operation depends upon having an opening into it sufficiently large to allow a good sized probe to be introduced without much twisting and compression of the surrounding tissues.

Treatment of the tear sac by injections is easier through the upper than the lower canaliculus. The fluids injected pass more readily down to the nose and also accumulations in the sac can be more easily pressed out by the patient.

The question of the size of the probe to be used in the operation is also one on which there is much diversity of opinion. Some authors never recommend a probe larger than Bowman's No. 3 or No. 4, others begin with No. 6, and again there are advocates of large probes at first, increasing to No. 16. The introduction of a small probe, No. 3 or No. 4, is more difficult in the ordinary run of cases as well as more dangerous than No. 6 or No. 8. This statement may seem paradoxical but it is practically true. A small probe is liable to pierce the mucous membrane and make a false passage. This is especially the case when operating on an acutely inflamed tear sac in the suppuration stage. The larger probe, and especially the olive pointed probe, separates the mucous membrane as it is pushed down into the lumen of the bony portion of the duct and thus is less liable to make a false passage. My preference is decidedly for the olive pointed probe in the

first treatment. It is easier to introduce, than the Bowman probe for the reason just stated. Later on, when one wants to dilate the duct and to get the effects of the caliber of the probe by leaving it in for a few minutes, the Bowman probe is better. I generally begin with a No. 8 olive pointed. If I cannot introduce this I try a smaller one. If I can pass it I at once try to pass a No. 10, and rarely ever use one larger.

THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE EYE AND EAR BY THE GENERAL PRACTITIONER.

BY

J. B. ALCORN, GALLIPOLIS.

It is not my object in this paper, to teach the older and more learned of the profession, but rather to recall to, refresh your memories in regard to a few points that are considered by me to be of great importance.

I refer to the diagnosis and treatment of diseases of the eye and ear by the general practitioner. This may seem to be a simple subject, but in my limited experience I find a great many sad results have followed the ignorance of the general practitioner on this subject.

Do not understand me to mean that all general practitioners should make an attempt at special work on the eye and ear, for that is a lamentable mistake.

For example, I saw a general practitioner, who thought he needed only a certificate of a two weeks attendance on a special course to make him a specialist on the treatment of diseases of the eye and ear, attempting to make an ophthalmoscopic examination with the mirror of the ophthalmoscope turned toward himself. And this, too, the day before he was to complete his special course and be thrown upon the public as a specialist.

A patient would be sure to find out if he had albuminuric retinitis or atrophy of the optic nerve if he applied for an examination from such a specialist? There is great danger in one posing as a specialist when he does not know anything of the danger from inability to properly diagnose a disease that could have been treated successfully by an educated specialist.

Take a case of mastoiditis, which, as related by the patient, the physician aided, by packing the external auditory canal with boracic acid. When the inflammatory stage was reached he called it an abscess and had the patient poultice it, this was followed by making a small opening, from which quite a large amount of pus escaped, it was packed and syringed for several months. Finally the physician said that he did not know what was the matter and advised him to go to Cincinnati at once. Instead he came to me and after trying a free incision through the periostium I was compelled to make a mastoid operation, when the patient recovered.

Another case I wish to refer to, was that of a young lady with but one good eye. This being inflamed and having some pain, she called upon a specialist (supposed) who told her that she had cold in her eye and that she also needed glasses. After two or three days treatment, from which she derived no benefit, she was referred to me. On examination, I found iritis, and making inquiry, found it to be of a specific nature. By putting her under specific treatment and heroic treatment of atropine, I obtained good results. This, undoubtedly, would have been a case of lost vision due to ignorance had it been allowed to go on without proper care.

Another outrageous case was that of a young girl who came to my office the past month. She had been treated for catarrhal trouble of the eyes when she really had ulceration of the cornea. As a result she is totally blind

and all the fault of the physician pretending that he could do something he could not do.

Another case, as related by the patient, was one of complete paralysis of the third nerve, causing ptosis and inability to move the eye. At the time I was treating the case, the patient was accosted on the street by a general practitioner, who, after looking at his eye, told him he had a pterygium and that he could take him where he could have it cured within three or four days. This was the diagnosis of a doctor of twenty years experience in a small city.

Frequently the physician sending a patient to a specialist will also send a letter stating that the patient has, for instance, cataract, when, in fact, it is a pterygium. This is ignorance that should not exist. The physician should not think because he is a general practitioner, that it is unnecessary for him to have a good general knowledge of the eye and ear. He should surely be able to distinguish between cataract and pterygium. I know it is difficult to draw the line of demarkation between the general practitioner and specialist, but each case, in a great measure, rests on its own merits and depends largely on the knowledge and good common sense of the physician in charge.

To my mind a general practitioner should be able to recognize and treat all the common diseases that flesh is heir to, and should at least be able to recognize the more serious and uncommon troubles so that if not in a position himself, he could refer them to some one who was.

The country doctor should not think that all that is required of him is to know how to set a broken bone, attend a case of confinement, conduct successfully a case of fever; but he should be able to attend to an injured eye or ear intelligently.

Opthalmology can really be classed among the specialties and I think one can practice it better after having had several years experience in a general practice.

The eye and ear are not separate and distinct parts of the body but like the branches of a tree, are different members of the same body.

A general practitioner should be prepared and able to give treatment to injuries of the eye produced by chemicals, in neutralizing the same, if acid, by filling the eye with a weak solution of an alkali as bicarbonate of soda; in the case of lime, by using milk or sweet oil.

There are general practitioners who do not want to remove a foreign body such as a cinder, a piece of stone steel or iron that has become imbedded in the cornea but rather let it go on to ulceration and eventually, loss of vision, if the patient is not able to go to a specialist. Iron-workers and machinists become quite expert in removing such foreign bodies and I think any physician should be able to do so when required.

In dealing with and treating perforating wounds of the eye it should be cleansed with a warm antiseptic solution and perfect quiet insisted upon. In case of a wound of the cornea with prolapsus of the iris, the iris should be excised and the same treatment carried out as in other wounds to the eye except that in addition atropine should be instilled to prevent iritis from following, then fill the palpebral fissure with powdered iodoform and bandage for protection.

The general practitioner should be acquainted, in a general way, with injuries to the eye and the probable consequences of such injuries.

The diseases to be or that should be recognized are: glaucoma, iritis, conjunctivitis, ulceration of the cornea and trachoma.

Glaucoma is a common disease, according to Fuchs, constituting one per cent. of all cases of eye disease. Its early recognition is of great importance because if proper treatment and operative interference is resorted to, the eye can probably be saved, while on the contrary if a false diagnosis is made, or if allowed to go on, or if improperly treated, it

will be lost. The general practitioner is not expected to be expert with the use of the opthalmoscope nor to tell the degree of glaucoma, but it is ignorance or neglect if he is not able to tell if there is any increased tension in an eye ball, which is indicative of glaucoma. He palpates the different parts of the body for pus; should he not be able to palpate the eye?

Inflammatory glaucoma may be confounded with iritis, a mistake quite disastrous because of the damage done by instilling atropine into a glaucomatous eye; but this mistake can be avoided, for besides the increased tension, we have a more dilated pupil than normal, in a glaucomatous eye and a more contracted one in iritis.

A general practitioner should be able to diagnosticate iritis from conjunctivitis for if he instills a solution of atropine into an eye with simply conjunctivitis the trouble is aggravated and the same will be the case if nitrate of silver is applied in iritis.

He should know that there is a discoloration of the iris in iritis, by comparison with the other eye and in simple conjunctivitis the lids become frequently oedematous with the secretions very much increased.

Ulceration of the cornea can be recognized by the general practitioner if he makes a very close examination; but if careless he calls it granulations of the lid, treats it by the use of blue stone, nitrate of silver and acetate of lead thus injuring the sight.

If on examination, an ulcer is discovered, the patient must be warned of the dangers of such a disease and in case the patient is not able to reach a specialist, the general practitioner should be able to prevent loss of vision by an opacity.

It is not expected that the general practitioner should be able to differentiate between the varieties of ulcer of the cornea, therefore, the best general treatment suggested, is the daily application of yellow oxide of mercury, eight

grains to the ounce of vaseline and keep the pupils dilated by instilling a four per cent. solution of atropine into the eye.

Another mistake, and a common one too, is diagnosing blepharitis marginalis as granulated lids. This mistake can be avoided by simply everting the lids and making sure as to the diagnosis. If trachoma, the conjunctivae of the everted lids will have a raspberry appearance or look similar to a granulating wound.

The treatment after diagnosis of trachoma is the application of blue stone or a five to ten grain solution of nitrate of silver.

I do not hold that these diseases should always be treated by the general practitioner but do contend that in cases of emergency he should diagnosticate and be able to give immediate relief until the patient can be sent to an oculist.

The general practitioner should be familiar with the anatomy of the ear, and should, by all means, be able to recognize the membrana tympani. As to its diseases, I think that there is but little that can be done by the general practitioner though he may be able to relieve pain. If he is called some distance into the country, with no specialist near he will be expected to relieve an acute otitis media. With no natural or artificial leeches at hand the treatment would be hot applications and a hypodermic tablet of atropine and morphine dissolved and dropped into the ear. It is recommended that no larger amount of morphine be dropped into the ear than would be given by the mouth. If, notwithstanding the antiphlogistic and other measures resorted to, the pain still remains, and we find on examination of the membrani tympani a bulging, with indications of a rupture, we should puncture at the point of bulging with a paracentesis needle or in the posterior inferior quadrant of the drum.

I do not think that the general practitioner should attempt to treat the other diseases of the ear, but should rather refer them to the specialist.

Of foreign bodies in the ear, an endless variety might be mentioned, introduced usually by children and hysterical people.

These may be divided into organic and inorganic, the former including beans, peas, etc., that absorb moisture from the external auditory canal, the consequent swelling of which makes them more difficult to remove; under the latter division might be included pebbles shot, etc.

The general practitioner, having convinced himself of the presence of the foreign body by the aid of the head mirror and ear speculum, which all practitioners should possess, should proceed to remove the same by flooding the canal by the use of a six ounce piston or common household syringe. The stream should be thrown inward and upward against the upper and posterior wall of the canal for if it is thrown against the membrana tympani it causes damage. Gently flooding the canal generally dislodges the body; but if it is of the organic variety and has swollen to any extent, the syringing may fail to remove it, when it will be found necessary to resort to surgical means. A hook or small scoop is preferable to forceps because of the less danger of forcing the body in farther.

When the membrana tympani has been punctured by a knitting or crochet needle, frequently used by women to relieve an itching in the auditory canal or to relieve cerumen, after first removing all blood clots by syringing with luke warm water, a small amount of boracic acid should be dusted in and the orifice closed by means of a pledget of cotton and allowed to heal.

There is another variety that might be classed as parasitical, such as gnats, candle bugs, etc.

A case that recently came under my care was that of a young girl, age fifteen years, and living some twelve miles in the country. She stated that there was something in her ear that fluttered and caused her great pain; that the attempts of her family physician to remove it, caused her

excruciating pain. Upon examination I found a gnat. I simply dropped a few drops of a boracic acid solution into the canal thus drowning the insect and relieving tne patient of her pain immediately. After failing to remove it by flooding the external auditory canal with luke warm water, I resorted to the forceps.

The point I wish to make is that the general practitioner in this case should have been familiar enough with such things to have stopped the suffering.

Patients will sometimes present themselves complaining of sudden loss of hearing which before, was normal. Upon examination of the auditory canal you will find it filled with a dark brown glistening mass of cerumen. The cerumen gathers slowly in the canal and does not produce deafness until the whole lumen of the canal becomes closed, which may happen suddenly by the patient attempting to clear the canal or the swelling of the cerumen after bathing and getting water in the ear. This deafness is usually accompanied by ringing in the ear at times, disagreeable sensations of dizziness. The treatment consists in removing the plug with luke warm water, to which is added a little bicarbonate of soda.

This sudden deafness is the variety that is cured so easily by the advertising specialist.

CHAPTER IX.

INFECTIOUS GRANULOMATA OF THE NOSE.

BY

WM. LINCOLN, M. D., CLEVELAND.

While the effects of late syphilis are often manifest in the nasal chambers tubercular ulcers or new growths are of comparative rarity. It is interesting therefore to observe the two cases described in this paper in which lesions exactly similar in their gross appearance, histological structure, and also in their position have these two different specific diseases as their causative factors. Of interest also is the appearance of a granuloma as an evidence of syphilis in this locality. The lesions caused by this disease in the nose being almost always ulcerative and not neoplastic. The picture of widespread destruction of the nasal tissues through syphilitic ulceration and necrosis are clinically very common.

[W. R. Univ. Dspy. Mar. 6, 1896.]

Case 1. E. C. Female, aet. 40, unmarried, Puella publica.

Family History. Negative.

Disease History. Contracted lues five years ago. Treated for a short time and discontinued after disappearance of skin manifestation of the disease. One year ago ulcers began to form upon hard palate. These were sluggish and painless. Six months ago began to have slight obstruction to free breathing through right nostril. This gradually increased and was accompanied by occasional slight epistaxis and sero-purulent discharge but no pain. To-day there

exists almost complete occlusion of right nostril and for this condition the patient applies for relief.

Examination shows mammillated tumor on cartilaginous septum of Rt. nostril, round in contour and measuring 20 to 25 cm. across the base; non-pedunculated but arising abruptly from the surrounding mucosa which is apparently healthy. This tumor bleeds easily, is firmly attached upon the septal issue, and presses against the inferior turbinated. The color is similar to the surrounding mucosa. A probe passed freely above and below and to the outer edge of the mass which is not painful to the touch. No sign of ulceration on the surface or above the edges of the tumor. On the hard palate are several ulcers 5 to 10 cm. in size, characteristically syphilitic in appearance and the scarred sites of many others. Other parts of nose and throat are normal in appearance.

Piece of tumor removed for microscopic examination.

Physical examination of chest, etc. entirely negative.

No subjective or objective symptoms of other trouble.

Treatment. K. I. in increasing doses.

March 13. Ulcers on mouth healing rapidly, 30 drops of sat. sol. K. I tid.

March 20. Nasal mass decidedly less in size. Ulcers in mouth healing. 45 drops sat. sol. K. I tid.

April 10. Ulcers healed, leaving scars. Septal tumor appears shrunken and whitish, and about one-third original size. K. I continued.

May 1. Granuloma of septum disappeared leaving slight depression at its site. K. I continued.

Since that date the patient has been seen once or twice at intervals of a month or two but has not reported now for about 6 months.

Microscopic. Examination of piece removed showed typical structure of tuberculous granulation with the presence of giant cells.

Case II. May 22, 1896. C. S., Widow, aet. 45.

Family History. Maternal grandfather died of cancer. Otherwise family history good.

Patient is nervous, hysterical, has lost considerable flesh. Has occasional night sweats. Had grippe followed by pneumonia one year ago.

Disease History. For last eighteen months has been increasingly troubled with nasal occlusion in R. Nostril, accompanied by quite severe pain in and above the nose. Discharge somewhat profuse and of a mucopurulent character has been present almost all the time. Has been told she had a nasal polyp and comes to have it removed.

Examination. Pale red mass situated upon the cartilaginous septum by a broad base, 25 to 30 cm. across, sessile. Mammillated surface bathed in mucopurulent secretion. No sign of ulceration. Tumor presses firmly against outer wall of the nose and the probe is passed by its outer surface with difficulty and causes bleeding, but passes freely above and below the mass. Tumor seems imbedded in the mucosa, which is slightly raised around it but not inflamed. No ulceration is seen on the surface or about the tumor. No other lesion is observable in the nose, mouth, pharynx or larynx. There is no lymphatic swelling. No history of lues.

Small piece removed for microscopical examination. This shows the ordinary structure of a tubercular granuloma with giant cells. No bacilli could be found. The whole mass was removed by means of a sharp curette. The scraping was carried well into the surrounding healthy mucosa and down to the cartilage.

Three months after operation nothing remained but small ridge of indurated scar tissue opposite the middle turbinated bone. The site of the tumor is now a slight concavity covered with apparently healthy mucosa.

One year after operation, the patient returned with exactly similar condition in left nostril. The granuloma which has been growing about four months (according to

the patient) and which is therefore not so large as the one removed occupies an exactly similar site on the opposite side of the cartilage. The patient has been put upon anti-syphilitic medication, as this had not been done before because the pressing nature of the symptoms demanded its rapid removal.

In this case I have not been able to find any positive signs, by physical or bacteriological examination, of tuberculosis, on chest or elsewhere. If the trial of anti-syphilitic remedies fails of its removal the granuloma on the left side will be removed with the curette. The patient who had gained considerable flesh after the removal of the first tumor is loosing again under the influence, mental and physical, of the second invasion.

Quite lately Massei (in an interesting and exhaustive treatise) has collected and studied a number of these intranasal syphilitic granulomata in which I find the very careful histological examination of the tumors corresponds closely to that found in the syphilitic granuloma here reported, it also differs in no wise from the one which I found, no history or suspicion of syphilis, past or present. And I would therefore point out the possibility of error in diagnosis if exclusive reliance is placed upon our microscopic examinations in these cases and insist upon the importance of a very careful physical and bacteriological examination. Bacteria should be searched for both in the sputum and in the cut sections of the tumor, for although the bacteria are very scarce and hard to find in the tissue, yet when found they give us a certainty of diagnosis not to be had by any other method.

Ziegler gives as the etiology of these granulation masses many of the specific infectious diseases syphilis, tuberculosis, leprosy, Rhinoscleroma, etc., but more frequently of course they arise from syphilis and tuberculosis, and are among the rarer manifestations of these disorders. In Zuckerkandl's description of luetic lesions in the nose no mention is made

of the occurrence of granulation tumors with giant cells, although the occasional occurrence of granulation tissue is noted, granulomata are noted as occurring only in tuberculosis. And in the latter case he asserts that these tumors sooner or later break down into tubercular ulcers, causing destruction and loss of tissue, or that the ulcerating and granulation lesion of tuberculosis may be combined.

(Major in 1893 refers to forty-two undoubted cases of nasal tuberculosis, twenty cases collected from the literature of the subject by Bosworth and twenty-two added by his own search subsequent to Bosworth's article.)

Later Herzog, in an able resume of this subject published ten new cases and tabulated seventy others already reported. Since that date the subject has been treated and other cases reported by Farlow, Chiari, Wobleski, Dionisi, Baurowicz, Koschier Orlandi and others.

In Herzog's report a case is mentioned which illustrated the point which I wish to make in this paper. The case was one in which a granulation tumor and other symptoms has been diagnosed as tubercular and were rapidly cleared up under the use of K. I. He further stated however that giant cells may be considered diagnostic of tuberculosis and exclude syphilis. But the microscopic findings of Massei's cases and of my own would not seem to allow of that conclusion. Most writers on this subject describe more or less clearly the occurrence of tuberculous granulomata with giant cells, but none except in the article referred to describe the similar neoplasm due to syphilis. *The local symptoms* of these growths are alike, whether due to tuberculosis or lues. The masses bleed readily and cause a hypersecretion of mucus or, if slightly ulcerated, a thin muco-purulent secretion may be present. Nasal obstruction causes its usual inconvenience but is accompanied by very little pain. Concurrent signs of the specific disease causing the tumor were present in both of these cases as I presume they would be in the great majority of such cases.

But in the tubercular tumor no signs of tuberculois at other points in the body could be discovered, and this was true also in some of the cases recorded in Herzog's report.

The appearance of the tumors with their mammillated surfaces raised sharply from the surrounding apparently normal mucosa is sufficiently distinctive to assure of their not being confused with other intranasal neoplasms except perhaps papillomata which are sometimes quite sessile. Then later tumors like the ones under consideration are rare, but their site has generally been noted as on the turbinated bodies, usually the inferior, while the infectious granulomata choose the septum in nearly all cases. Microscopically, while it is hard to distinguish the specific granulomata from each other, their structure is unlike papillomata or any other form of malignant or non-malignant intranasal neoplasm.

To differentiate those due to syphilis from the tumors due to tuberculosis one will be helped, as I have before stated, by the results of physical and bacteriological examination more than by an examination of the histological structures. (Massei mentions endartentis in lues in two cases) Treatment of tubercular granulomata I think should be by removal of the growth as completely as possible. Its through removal is undebated to rid the patient of a form of bacterial invasion and activity and to remedy the local disturbance caused by its presence. This is probably best accomplished by means of a sharp curette, being careful to scrape down to the cartilage and well into the surrounding healthy mucosa.

The syphilitic granuloma will yield to the usual anti-syphilitic treatment, but surgical interference is, I think, not contraindicated if the growth is sufficiently large to cause considerable obstruction and this may be carried on in conjunction with anti-syphilitic treatment.

INTUBATION FOR LARYNGEAL DIPHTHERIA.

BY

J. A. THOMPSON, M. D., CINCINNATI, O.

Whenever in laryngeal diphtheria the air fails to enter the posterior inferior lobules of the lung at each inspiration, an intubation tube should be inserted. Delay in the operation after this time, permits the alveoli to collapse. The aspirating action of obstructed inspiration produces a venous congestion of the lungs. In the labored efforts to obtain breath, septic matter will be drawn from the upper air passages into the bronchi. All the conditions favorable for the production of a septic lobular pneumonia are produced where the laryngeal obstruction is not relieved. If we wait for restlessness and gasping inspiration, sinking in of the intercostal spaces and the marked recession of the larynx on inspiration, before intubating, we may give temporary relief to the laryngeal stenosis but we have greatly lessened the chances for a favorable result. If we are to increase our percentage of recoveries in intubation cases, it is essential that the operation should be made early. As intubation requires no anæsthetic, no cutting, and involves very fittle pain and no loss of blood, there is no good reason for not making the operation promptly. Here is one of the situations where an unnecessary operation would do no harm. The physician need not hesitate long as he would before deciding to make tracheotomy, hoping that some favorable change would make relief through operative interference unnecessary.

It follows as a necessary corollary to the need for a prompt operation that the family physician who treats diphtheria

should educate himself in the work until he is able to intubate without waiting for skilled assistance. If the best results are to be obtained, intubation must be done without waiting to send to a neighboring town or city for a specialist skilled in throat work. In cities where such aid can be secured without delay, advantage can be taken of the laryngologists familiar with operations in this region and better results will follow skill and experience in this as in any other operation.

There is only one way for the family practitioner to learn the operation properly. He should be taught to introduce the tube on the cadaver until his fingers are thoroughly familiar with the land marks, and until he understands the mechanism of the intubation set. In the past three years I have taught more than one hundred and fifty students and practitioners, intubation on the cadaver. As a result of this experience I find that a man of ordinary intelligence and ordinary skill in the use of his hands will easily and quickly learn to make this operation. I have met only a few men whose fingers were so thick that they could not be taught to properly introduce the tube.

The directions for making the operation may be briefly recapitulated as follows:—Two assistants, preferably men, are required. The child is wrapped in a roller towel so as to fasten the arms to the side, from the middle of the arm downwards. With a child not much depressed it is wise also to extend the wrapping to the legs. In this binding, care should be taken not to interfere with respiration by putting too much pressure on the chest. The wrapping should not be placed so high as to interfere with the hands of the operator. The first assistant sitting in a chair, holds the child's head on his left shoulder with the legs held between his knees. The second assistant standing behind the first, places his hands over the back of the head and over the ears of the child so as to hold it as if suspended. The mouth gag is inserted at the left side, slipped well back between the

molar teeth and then opened. The second assistant places his left hand over the gag so as to prevent it from falling forward if the child in struggling and crying opens the mouth widely. This is the only defect of the gag furnished with the intubation set. It will fall out if the child opens the mouth wider than the gag is set. A careful assistant is absolutely necessary to hold the head and the gag to prevent the operator being bitten. The index finger of the left hand, well covered with vaseline, is then slipped into the right corner of the child's mouth and the finger passed rapidly back over the tonsil until the tip is in the fold behind the posterior pillar of the fauces. By slipping the tip of the finger down in this groove you are necessarily behind the epiglottis which is lifted up and pressed forward by the finger in this position. The direction usually given, to feel for the epiglottis, is not the best teaching. In very young children the epiglottis is not easily felt. When covered with membrane, it is still more difficult to distinguish. If the finger is passed back over the dorsum of the tongue, inexperienced operators will press the epiglottis back so as to cover and close the glottis. The best land mark is the arytenoid cartilages, or really, the capitula santorini lying over them. By taking the posterior part of the larynx for your land mark, you get the advantage of the widest part of the triangular opening of the glottis. The hand holding the introducing instrument is kept in the median line and should be almost in contact with the child's breast when you start to insert the tube. The hand, both in inserting the tube and in withdrawing the obturator must be kept absolutely in the median line, otherwise the knob on the lower end of the obturator will turn the tube so that it will not fit the larynx accurately. Consequently, the child cannot swallow well and the removal of the tube is difficult. The tube is guided with its point under the finger until directly over the opening of the glottis when the handle of the instrument is raised quickly and sharply as though the

instrument and tube were pivoted at the lower end of the tube. It is advisable to wait for an inspiration before making this movement. When the child inspires, the vocal cords are abducted. They are not level in the larynx but have an inclination downward and outward from the median line. If the point of the tube is first placed on either of the vocal cords, it will be guided off to the side of the larynx into the ventricle and can only be passed on down in this position by forcing it through the vocal cord. If it were possible to do this, the result would be a permanent loss of voice. Where the tube does catch on the upper surface of the vocal cord, it should be withdrawn and reinserted taking care to place it in the larynx, only when inspiration has drawn the cords out of the way. With the tube introduced below the vocal cords, it is carried down by elevating the handle of the instrument. The slide is then thrust forward so as to loosen the tube from the wedge shaped portion of the obturator. The slide is immediately drawn back again so as to get the forks out of the way of the index finger of the left hand. This is placed on the head of the tube and with the introducing instrument the obturator is lifted half way out of the intubation tube. Dropping the hand then into the position first taken, a motion which the joint in the middle of the obturator permits, the obturator is lifted entirely out from the tube. As soon as the obturator is removed, if the tube is in the larynx, a deep inspiration will be taken followed by a violent cough. The operator should have a towel at hand where he can reach it the instant the introducing instrument is laid down, to hold in front of the child's mouth to prevent the diphtheritic virus from being coughed into his face or over his clothing. During this first paroxysm, it is necessary to hold the tube in position with the index finger. The position of the tube can be determined by passing the finger over the back of it. If the tube is in the larynx, the arytenoid cartilages

will be felt between the finger and the tube. If the tube is in the oesophagus the finger will come in contact with the bare tube. As soon as the cough subsides, the parts should be examined by the sense of touch and the tube placed accurately in the proper relations with the larynx. If this is carefully done, there will be little difficulty in swallowing in cases where the epiglottis is not too much thickened by diphtheritic membrane. After an interval of a few minutes, if it is evident the stenosis is relieved, the string should be cut and withdrawn while the tube is held in position with the finger on the head of the tube.

The only accidents to be dreaded in intubation are pushing down a bit of membrane in front of the tube so as to occlude its lower end, and the breaking of the instrument so as to leave the obturator in the tube. The first accident occurs in about one-half of one percent of all cases. Of the latter accident, I believe there is only one recorded case. If either occur, the tube can be rapidly withdrawn by means of the string inserted for that purpose. Where membrane has been detached, if the stenosis is not relieved by withdrawal of the tube, a rapid tracheotomy must be made. For this reason the operator should always carry the instruments necessary for tracheotomy, with his intubation case. Where edema of the parts or an abundance of membrane makes swallowing difficult, the child can be fed from a nursing bottle or through a medicine tube when lying with the head the lowest part of the body. In this way we avoid some of the dangers of inhalation pneumonia.

The after treatment of the case is modified very little by the presence of the intubation tube. The only remedy in common use that would be contra-indicated would be sprays or local applications of Bichloride of Mercury. In from forty-eight to seventy-two hours, there will gather on the intubation tube a deposit of calcareous matter which makes the surface so rough that ulceration will be produced if the

tube is not removed and cleansed. This is best done by dropping it in a cup of vinegar. There is another good reason for the removal of the tube at the end of this period. The cough of a child with an intubation tube in the throat is not effective in clearing the lungs of accumulated mucopus and membrane. If the tube can be left out for an hour when removed for the purpose of cleansing, it would give an opportunity for clearing the bronchial tubes by effective coughing. During this period though, the operator must remain in the house with the child lest a sudden stenosis result fatally.

There is no question more perplexing to me in the individual case than when to remove the tube. If removed too early, there will be a recurrence of the stenosis and the necessity for a second operation. If left too long, there is the liability to the detachment of membrane from the trachea and bronchi. If a firm piece of this detached membrane is coughed into the tube when skilled assistance is not in the room, death from strangulation will result. Probably the safest rule is to remove the tube as soon as the character of the expectoration shows that the membrane is being loosened in the bronchi.

For the removal of the tube the child is confined in the same manner as for its insertion. The same assistants are required. The mouth gag is inserted and the finger passed into the throat until it is in contact with the head of the tube. Then the tip of the extracting instrument is guided in under the finger, the handle being held accurately in the median line until the tip of the instrument strikes the head of the tube. The tip is then moved about very slowly and very gently until it drops into the opening of the tube. The handle of the extracting instrument is at once raised so that the axis of the tube aud of the tip of the extractor are in the same line. This motion introduces the tip well into the tube without any force. The blades are pressed apart and the tube

lifted until the head is out of the larynix. The index finger of the left hand which is still in the throat is then passed under the head of the tube and aids in holding it firmly on the extractor. A rapid reversal of the motion by which the instrument was introduced will withdraw both extractor and tube. The operator should remain with the child for at least an hour after the withdrawal of the tnbe. Occasionally a rapid edema of the glottis will follow relief of pressure on the laryngeal membrane. In one of my own cases this condition required the reinsertion of the tube twice. The tube was worn ten days before it could be finally withdrawn. In other cases diphtheritic membrane will reform and require the reinsertion of the tube in a few hours. The operator must remain within call for this period to reinsert the tube if necessary.

The argument as to the comparative merits of intubation and tracheotomy are so familiar that I shall not enter into discussion of that topic.

The introduction of the antitoxin treatment of diphtheria has raised several new questions in regard to intubation. In order to aid in their solution I have collected three hundred and fifty six cases of intubation for laryngeal diphtheria from Cincinnati operators. The cases from which my data were drawn were those of Drs. B. P. Goode, W. E. Shaw, J. L. Cleveland, C. B. Van Meter, W. H. DeWitt, E. W. Mitchell, A. B. Isham, A. Grimm and the author. Of these cases three hundred and twenty-seven were intubated without the use of antitoxin and in twenty-nine that remedy was employed. Thirty-nine percent of the first series recovered; in the second series, sixty-eight percent. Where no antitoxin was used the tube was worn an average time of eighty-eight hours. The antitoxin cases required the tube only fifty-six hours.

Where antitoxin was not used an average time of nine days elapsed before complete recovery of the voice. The same result was obtained in four days in the antitoxin

cases. It will be noted that the percent of recoveries in cases where antitoxin was not used is higher than the figures obtained in the collective investigation by the American Pædiatric Society, The percentage of recoveries in antitoxin cases is less than the results collected by the same society. The number of antitoxin cases though, in this series is too small to attach much value to the conclusions deduced from them.

DISCUSSION.

DR. J. F. BALDWIN, Columbus:—I wish to speak but a word on this subject. For a number of years I did practically all the intubating that was done in Columbus and vicinity. I had, therefore, quite a large experience. For the last two or three years I have refused to see diphtheria cases, owing to the superior claims of other work and owing to the fact that other physicians in the city are ready and prepared to intubate. I am, therefore, so far as intubation is concerned, entirely disinterested. I have always urged that some one or two men in every considerable town should familiarize themselves with this art. I do uot think that every practitioner should undertake to intubate. I certainly pity the first two or three patients into whose throat any physician attempts to put a tube. I do not think any of us would like to have a catheter passed by a man whose experience was derived from a cadaver, and so it is with intubation. I have insisted that men should practice first on the cadaver and then on the dog before attempting to intubate the human subject. The dog's throat is not like the human throat, to be sure, but the struggling and movements will give valuable experience. I have been called as far as 100 miles to intubate, and in most of these cases the loss of time resulted in the loss of the patient. No one ought to be obliged to send more than 20 or 25 miles to find an expert intubator, hence every cosiderable town and every county seat should contain an expert. Moreover, there should be no delay in intubating. There is practically no risk in the operation itself while the dangers of delay are very great.

DAN MILLIKIN, Hamilton:—I am exceedingly thankful to the other Dr. Thompson, also, for bringing us some

ripe truths in regard to intubation, which, say what you will, up to a year or two ago has been an operation still on probation.

I would like to express myself, also, as thankful to Dr. Baldwin, who always makes a good speech, although he has a tendency to speak too long. I know there is a dog in my neighborhood that certainly will be intubated, and if the operation produces aphonia I will leave the tube in indefinitely.

DR. THOS. HUBBARD, Toledo:—There is one point which is not sufficiently emphasized in reports of this kind. I do not know that I have ever seen a careful study of this very essential feature in the diagnosis in laryngeal diphtheria. It is one thing to say we have laryngeal diphtheria and another thing to prove it. We find simple hyperaemia, and septic inflammation and congestion and oedema that can give all the symptoms of laryngeal diphtheria, and I think statistics are deficient in that they do not prove positively that there is a diphtheric process in the larynx. From the inhalation and dropping down of septic material and irritant topical medicaments into the larynx there is in many cases produced an inflammation, which, together with a febrile condition, is sufficient to cause a dangerous degree of stenosis. And yet it is not necessarily laryngeal diphtheria. In several cases where I was at first positive that the patient had laryngeal diphtheria, on examination with the laryngoscope I could detect no membrane. Three or four were cases of subglottic oedema. In one of these in which there was a history of faucial diphtheria several days previous, the larnyx was not even hyperaemic. The child was dying. I told the parents I thought possibly it was a case of tracheal diphtheria and that tracheotomy was probably indicated. They preferred intubation with the understanding that we were, if necessary, to immediately perform tracheotomy if intubation failed.

After the introduction of the intubation tube an ounce or two of clear serum was expectorated. The tube had ruptured the œdematous sac in the trachea. The child made a good recovery.

Three other cases of tracheal œdema in children have occurred in my practice. It is very difficult to prove the absence of diphtheritic infection in these cases but certainly

they should not be included in statistics of such vital clinical importance as cured laryngeal diphtheria.

DR. J. A. THOMPSON, Cincinnati:—Dr. Baldwin's teaching and mine, in regard to intubation, would agree exactly. I emphasized, in the first place, the necessity for every practitioner, who handles much diphtheria, of being able to intubate if the emergency required it, without a long delay for skilled assistants. I also said that in cities, where expert laryngologists can be secured without much delay, it is better to have a few men make the intubations, because increased skill and experience bring better results. As regards intubation on animals, I do not believe this would be of much value, because the angle of the larynx and the lower jaw is so different in the human and the lower animal.

NOTES ON THE ÆTIOLOGY OF INFLAMMATION OF THE ACCESSORY SINUSES OF THE NOSE.

BY

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In the present paper we wish to make a preliminary report on the results of our studies of eighteen cases of inflammation of the accessory sinuses of the nose. The material for the most part has been derived from the private practice and dispensary service of one of the writers (Ingersoll), but to the courtesy of Drs. Haman, Bunts, Sherman, Stephan, and Wenner we are indebted for the opportunity of making cultures in the cases of several patients on our list. The cases were both acute and chronic, some dating, according to the histories, from twenty to thirty years.

We shall limit ourselves in the present report to a statement of the results of our studies, and leave the details of cases and cultures for a later article. Our cases include suppurations of the antra, and the ethmoidal and frontal sinuses. The methods employed for obtaining the material for study were several. From the antra the material was obtained in one of three ways: (1) By exploratory puncture with a straight trocar well up under middle third of the inferior turbinal in the majority of cases; (2) through an opening in the alveolar border of the superior maxilla, after the extraction of a tooth; and, (3), in two cases in which neither of the first methods could be adopted, pus was obtained by means of a platinum needle, or a cotton swab, from or near the ostium maxillare. In all cases the utmost care was used to cleanse the nose and to avoid contamination of the pus and infection of the patient. Pus from the frontal and ethmoidal sinuses was usually obtained at operation.

The method of examination of material obtained from the sinuses was as follows: Both stained and unstained coverslip preparations were studied, and the kinds and relative number of cells were noted. Tubercle bacilli and protozoa were looked for, but always with negative results.

Cultures were made on coagulated blood-serum, and on agar-agar plates.

The pathogenesis of nearly all the organisms found was determined on rabbits or guinea-pigs.

The antrum of Highmore was involved in fifteen cases, with a total of seventeen antra; the right antrum in five cases (VII., X., XI., XVII., XVIII.), in three cases alone, and in one case with the ethmoidal sinuses (VII.); and in one case with the frontal and ethmoidal sinuses (XVII.), The left antrum was involved eight times alone (Cases I., II., III., IV., VIII., IX., XIII., XVI.). Both antra were affected in two cases (VI. and XIV.), and in each of these the ethmoidal sinuses were involved. In these cases the

process was chronic. Three of the cases of antral disease were acute (IV., VII., XI.), and twelve were chronic. Two of the acute cases followed influenza (IV. and VII.). In the first the streptococcus pyogenes was found in pure culture, and in the second, the influenza bacillus and the staphylococcus pyogenes aureus; the third case followed a severe coryza, and the diplococcus lanceolatus and the pseudo-diphtheria bacillus were found. Of the twelve chronic cases, two followed influenza (I., XIII.), the first being associated with hypertrophy of the inferior turbinal, and was complicated with facial erysipelas, and abscess of the alveolar process of the superior maxilla, and a fatal secondary septicæmia, due to the streptococcus pyogenes. There was found in the antrum of this patient, who came to autopsy, a polypus, and the walls were swollen, deeply congested, and œdematous, In the second patient the nose was normal, and cultures from the antral contents gave the bacillus mucosus capsulatus.

Case II. was secondary to a syphilitic ulceration of the alveolar and palatal processes of the superior maxilla. In the pus from the antral cavity the streptococcus pyogenes, the staphylococcus pyogenes aureus, and the bacillus mucosus capsulatus were found. In this case nasal polypi were also present.

Case XVII. followed an acute coryza succeeding exposure after pneumonia, and was apparently of thirty-years' standing. The frontal and ethmoidal sinuses were involved with the right antrum. In the cultures from the antrum, the streptococcus pyogenes, and the staphylococcus pyogenes aureus were found.

In Case XVIII. the *atrium infectionis* was apparently through a decayed bicuspid tooth. In the cultures from the pus the diplococcus lanceolatus was found in pure culture. In Case VIII. there was tenderness and swelling about the first and second bicuspids of the affected (left) side, and these two teeth were slightly decayed. There

was hypertrophy of the left inferior and middle turbinals. Cultures in this case gave the staphylococcus pyogenes albus and a thread fungus which was not pathogenic for guinea-pigs nor rabbits. In Case XVI. there had been a purulent discharge from the left nostril for a year, and there was pain and swelling about the second left bicuspid tooth. The tooth was badly decayed and an abscess extending from it was found. The streptococcus pyogenes and the staphylococcus pyogenes aureus grew in the cultures. In Cases IX. and X. there was a long-standing atrophic rhinitis. In Case IX. there was anæmia and neurasthenia. Cultures from this patient gave the staphylococcus pyogenes albus and an unidentified bacillus. In Case X. the streptococcus pyogenes and the staphylococcus pyogenes aureus were found.

Of the two cases of bilateral empyema of the antrum, Case VI. had a purulent discharge from the left nostril for twenty-two years, and from the right nostril for twelve years. Twelve years before coming under observation all the upper teeth had been extracted and a plate inserted. About five years ago there was an otitis media acuta sinistra. Since then both nasal fossae have been occluded and the sense of smell lost. On examination both nasal fossae were found to be filled with polypi, and one large polypus filled the nasopharynx. From the right antrum the streptococcus pyogenes was found in pure culture; in the left, the streptococcus pyogenes and bacillus mucosus capsulatus. In Case XIV. the streptococcus pyogenes was obtained from both antra. There is no history of antecedent acute infections disease in this case. In both cases (VI. and XIV.) the ethmoidal and frontal sinuses were involved.

Of the chronic cases, three followed acute infections diseases (influenza, coryza, and pneumonia), one was due to syphilitic ulceration of the hard palate and alveolar process; two were clearly, and another possibly, secondary to dental

decay, and two were associated with atrophic rhinitis; in three cases there were nasal polypi present, and in three there were hypertrophies of the turbinals.

In the seventeen antra examined, the streptococcus pyogenes was found in eleven, five times alone, four times with the staphylococcus pyogenes aureus, once with the bacillus mucosus capsulatus, and once with the pneumococcus and the bacillus mucosus capsulatus. The staphylococcus pyogenes aureus was never found alone, but with the streptococcus pyogenes four times (III., X., XVI., XVII.), and with the influenza bacillus once (Case VII). The bacillus mucosus capsulatus was found alone in one case (XIII.), with the streptococcus in the left antrum of Case VI., and with the diplococcus lanceolatus and the streptococcus pygones in Case II. The diplococcus lanceolatus occurred alone in one case (XVIII.), once with the pseudo diphtheria bacillus (II.) and once with the streptococcus and the bacillus mucosus capsulatus (VI.) The staphylococcus pyogenes albus was found once with a non-pathogenic thread fungus (VIII.), and once with an unidentified bacillus (IX.).

In three cases the frontal sinuses were affected alone, the right sinus twice (V., XII.), and the left once (XV.) In one case (XVII.) the right antrum and the ethmoidal sinuses were also involved. In the first case (V.) the process followed a severe coryza. Twenty years ago there was intense frontal headache, most marked on the right side. After a few days spontaneous rupture occurred, and there has been a continuous discharge of creamy pus ever since. Several cubic centimeters of pus were obtained by aspiration through the fistulous tract. The right middle turbinal was hypertrophied at its anterior end, and the septum deviated slightly. There was no discharge of pus from the nostril. The other sinuses appeared normal. Cultures gave the staphylococcus pyogenes aureus and an unidentified non-pathogenic bacillus.

In the second case (XIII.) the patient, a girl, aged eleven years, eighteen months ago had a severe attack of coryza. Since then there has been frontal headache, most marked on the right side, and a purulent discharge from the right nostril. Pus from the right frontal sinus contained the diplococcus lanceolatus in pure culture. In case XV. the left frontal sinus was affected alone. The process was of long duration, and the abscess had ruptured spontaneously. Pus obtained from the sinus contained the staphylococcus pyogenes aureus and the bacillus mucosus capsulatus. In Case XVII. with empyema of the right antrum there was inflammation of both the frontal and ethmoidal sinuses. From the antrum and the frontal sinuses the streptococcus pyogenes and the staphylococcus pyogenes and the staphylococcus pyogenes aureus were obtained.

In Case XIV. there was empyema of both antra, and of the ethmoidal and frontal sinuses. The frontal sinuses contained pus and polypi. In the pus from the frontal sinuses, as well as from the other cavities, obtained several times, there was always found a streptococcus growing in short chains which slowly liquified gelatin. This organism was not pathogenic for animals. The first three cases were instances of chronic empyema of the frontal sinuses, two of them following acute coryza. The ethmoidal sinuses were never found affected alone, but always in association with antral empyema, and, with one exception, with empyema of the frontal sinuses as well. In Case VI. both of the antra and the frontal sinuses were involved (see above). In the material from the ethmoidal sinuses the streptococcus pyogenes was found. In Case XIV. both antra and the frontal sinuses were also involved and there again the streptococcus pyogenes was found in the ethmoidal scrapings. In Case VII. the process was associated with empyema of the right antrum following influenza, and in the pus the staphylococcus pyogenes aureus and the influenza bacillus were found. In the last Case (XVII.) there was also

empyema of both antra and frontal sinuses as well as of the ethmoidal sinuses. In the material obtained from the latter the staphylococcus pyogenes aureus and the bacillus pyocyaneus were found.

While in our experience primary inflammation of the frontal sinuses is not uncommon, we have never met with inflammation of the ethmoidal sinuses, except when secondary to and accompanying inflammation of the antra either alone or in combination with the frontal sinuses. Our material, except in the first case, which came to autopsy, has been derived from the living. The inflammatory process was well established in every case. In the affected antrum of Case I. there was a polypus, the cavity was filled with a thick pus, and the walls were congested and oedematous. In the other cases the character of the pus varied. Usually, however, it was mucopurulent; not infrequently it contained fibrin, and in some cases it was thick and of a creamy appearance. As previously stated, tubercle bacilli and protozoa were never found. Besides bacteria and polymorphous nuclear leucocytes, which were present in varying numbers, in nearly every case, large, swollen, flat, sometimes round, sometimes ovoid or even polygonal cells, epithelial in appearance, were seen. These cells varied in size, had oval or round vesicular nuclei, with finely granular protoplasm, and often contained large or small fat droplets. Occasionally they contained bacteria. These cells were found in material from the antra and the frontal and ethmoidal sinuses. Columnar epithelial cells were never seen. These swollen epithelial cells must have been changed into desquamated cells from the walls of the various cavities. In some cases these cells were very much more numerous than in others. Cases in which these cells are numerous, we are disposed to call catarrhal.

CHAPTER X.

THE APHASIAS AND THEIR MEDICO-LEGAL RELATIONS.[1]

BY

F. W. LANGDON, M. D., CINCINNATI.

When Broca, in 1861, announced the localization of the faculty of spoken language, in the left third frontal convolution, he marked the beginning of an epoch in the delimitation of brain functions, of which we are perhaps approaching the end.

His observations—limited to motor speech-processes—have been extended by a host of observers,[2] until at the present time no less than twenty-eight distinct varieties of speech-disorder may be said to exist. (See table p. 370a)

Each one of these possesses its own importance, either in its purely scientific, its clinico-therapeutic or its medico-legal aspects.

(1) In the preparation of this paper use has been freely made of the chapter on "Speech Disorders" contributed by the writer to The American Text-Book of Legal Medicine—Saunders, Philadelphia, 1897. (In press.)

(2) The writings of Broca, Trousseau, Charcot and others in France; of Wernicke, Kussmaul and Simon in Germany; Meynert and Benedict in Austria; Hughlings Jackson, Broadbent, Gowers, Bastian and others in England; and of Austin Flint, Bigelow, Starr, Mills, Eskridge and others in our own country, have been freely utilized in the present paper.

The most important general works on the subject in the English language are those of Bateman "On Aphasia," etc. London, 1890; and Wyllie "The Disorders of Speech," Edinburgh, 1894. Since this article has gone to press another important volume has appeared, entitled "Aphasia and the Cerebral Speech Mechanism," by William Elder, M. D., etc., London, Lewis, 1897.

NORMAL SPEECH PROCESSES.

By common consent the term "speech" as a cerebral function, has come to be synonymous with "language," although the two are, evidently, quite distinct, language bearing the same relation to spoken speech that music does to dancing, *i. e.*, it *decides the movement* by which it is expressed. It is in the sense of the reception, elaboration and emission of *language*, therefore, that the term speech is here used.

Normal speech, in this sense, embraces the capacity to correctly *receive*, *understand* and *convey* to others, *ideas*, represented by words, which words may be either spoken, written, printed or indicated by signs.

To use a familiar example the idea of a fish—correctly received, understood and expressed comprises: (See Fig. 1.)

(1) **Reception of sensory** impressions conveyed through organs of sight, smell, taste, hearing, touch, weight and temperature senses, to appropriate brain areas, where they become percepts.

(2) **Association** or combination of these various sensory impressions and other percepts and concepts, *i. e.*, water, cooking, dishes, etc., to make the "concept" or idea "*Fish.*" Here also would come the association with its name—considered by some (Mills,* Broadbent, Charcot, Kussmaul,) to be a distinct faculty in itself.

(3) **Expression**, composed of two distinct factors, viz.: First, the purely "psychic" act of word-construction or planning, comparable to the planning of a house by the architect; secondly, *psycho-motor* or executive processes, leading to *emission* of the word fish—either spoken, written, printed, drawn in outline or indicated by pantomime. These latter processes are analogous to the building of the house by various workmen from the plans previously made.

*A text-book of Nervous Diseases by American Authors—Phila. Lea, 1895, p. 427.

Expression here resembles all the other known forces in that it is merely a "mode of motion."

The diagram (Fig. 1) shows in concise form the general relations of the processes just mentioned.

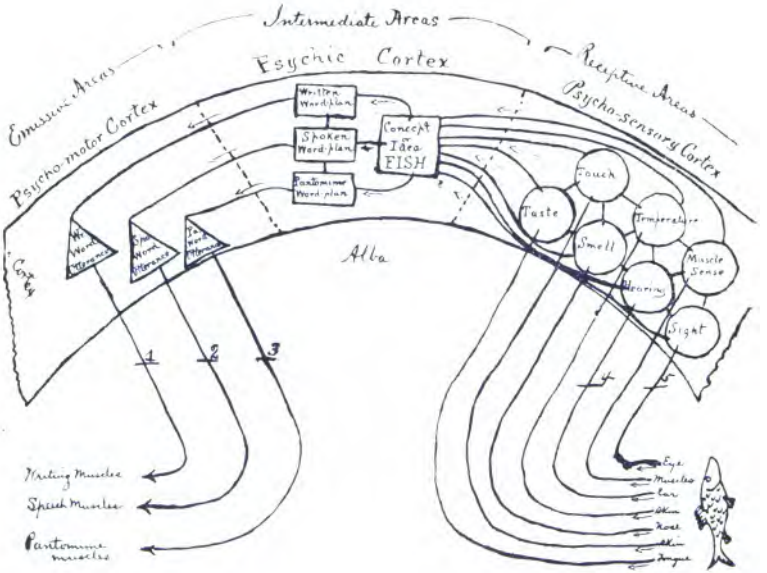

FIG. 1. Scheme of receptive, intermediate and emissive mechanisms of normal speech.

Numbers 1, 2, 3, 4, 5, indicate situations of sub-cortical lesions destroying reception or emission by one or more paths without impairing sensory memories, concept memories, language construction or utterance memories.

It should be clearly understood that the circles, squares, triangles, etc., do *not* represent groups of neurons (cells) but more probably "fields of conjunction" of neuron process or "end-tufts." See Fig. 4, in illustration of this.

According to modern and generally accepted doctrines,

the anatomical and physiological units of the nervous system are structures called *Neurons*.† (Fig. 2).

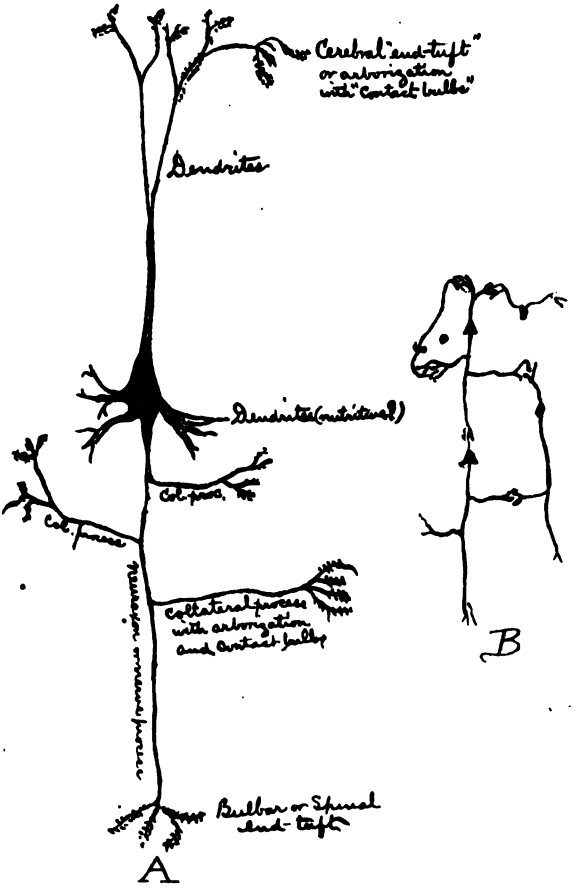

FIG. 2. The Neuron of Waldeyer. A, "pyramidal" neuron of the motor cortex, highly magnified (semi-diagrammatic).
B. Communications of neurons with each other by means of end-tufts (or aborizations). The contact bulbs or "gemmules" are omitted in the small figure.

†It may be well to state that the term neuron is here used in the sense indicated by Waldeyer. Some confusion respecting the scope

THE NEURON.

These are protoplasmic structures, microscopic in size, consisting of an enlarged portion called the "body" (formerly known as a nerve "cell") from which proceed elongated processes in various directions. These processes present near their terminations small swellings called "gemmules" or "contact bulbs,"‡ by means of which impressions are presumed to pass from neuron to neuron throughout the nervous system. In normal speech processes chains of such neurons, commonly composed of two or three individuals linked together, conduct sensory impressions from without to the brain cortex, where they become a part of consciousness. Here neurons, parts of neurons or other chains of neurons, convert percepts into concepts (ideas), concepts into word-plans and word-plans into motor impulses; these motor impulses are transmitted through other (outgoing) chains of neurons, to the various muscles of respiration, phonation, and articulation to produce spoken words. Presumably, each neuron and each chain of associated neurons possess a separate and distinct function, though this is not, at present, susceptible of actual proof as regards speech processes. It is probable that the more numerous and complete the communications and inter-relations of the neurons, the more varied will be the sources of language and the more perfect its elaboration, other things being equal. Differences in the complexity of organization and inter-relations of neurons therefore probably constitute the natural differences in individ-

of the term exists by reason of the fact that Schafer and perhaps some other writers have applied the term "neuron" to the neur-axon (one of the neuron processes). Waldeyer's nomenclature however is now generally accepted throughout the world.

‡There are strong reasons in favor of the view that these "contact bulbs" possess the functions of extension and retraction, by "amœboid" movement or otherwise, and that to this movement is due the "make" and "break" of contact and consequently of function observed in various states. (Vide, Dercum, Journal Nervous and Mental Disease, 1896, p. 513.)

uals as regards range and command of language. It is probable that the subject of speech disorders will eventually be considered from the standpoint of the neuron, as nervous diseases in general now are.

At present however, for practical purposes, the areas of brain cortex which are especially concerned with speech processes are five in number and, as shown in the accompanying diagram (Fig. 3), they are only educated for speech purposes on the *left half* of the brain in *right handed* persons. In most left-handed persons probably the right-half contains the speech mechanism.

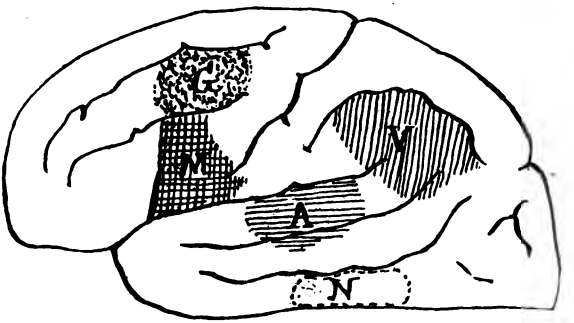

FIG. 3. Modified from Wylie.

Left cerebral hemisphere showing receptive speech areas (A), word-hearing, (V), word-seeing; and emissive speech areas (M), motor; (G), graphic. A fifth area (N), intermediate in order of function between the receptive and emissive areas, has been described by Mills and McConnell as the "naming" or "concept" area (Jour. Nerv. and Ment. Dis., Jan., 1895, p. 1) and a case recorded to favor this view. See also foot note on p. 381.

Connections (commissures) by means of associative mechanisms are believed to exist between each of these areas. These connections are probably paired, e. g., one set passing from A to V, another from V to A. Lesions of these commissures cause the various forms of paraphasia, (intermediate or "conduction" aphasia).

In these areas presumably, the neuron processes concerned in the various subdivisions of the speech process are grouped—each subdivision to a considerable extent aggregated, but connected by neuron-processes of various

kinds (collaterals, dendrites, etc.,) with each of the other groups. According to modern views the chief seat of nervous activities proper (sensation, motion, thought, etc.,) is at the points of contact between the end-tufts (fields of conjunction); not at the neuron-bodies ("nerve cells") as was until recently taught. The neuron-bodies, (formerly "cells") are now believed to bear chiefly a nutritive relation to the more active neuron processes. These neuron processes again are not simple homogeneous structures, but are resolvable microscopically into aggregations of minute tubules containing fluid or semi-fluid material.

To the *receptive* areas come entering sensory impulses, traversing the neuron-chains extending inward from the corresponding external sense organs (ear, eye, etc.)

From these receptive areas of the brain cortex pass neuron processes connecting one area with another and

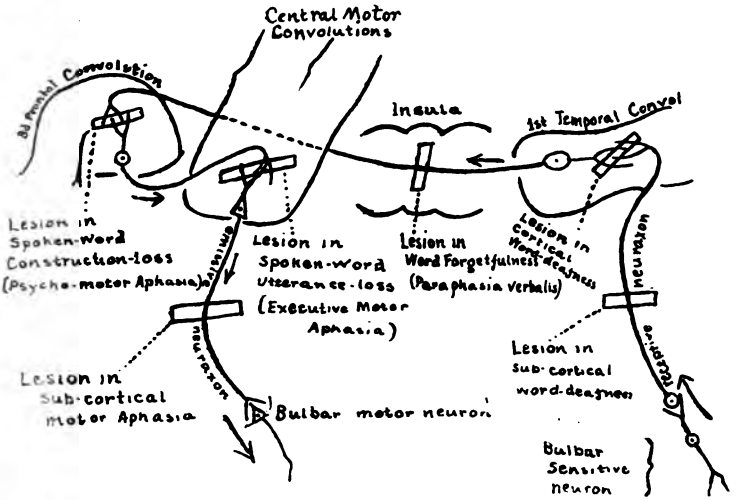
Central Motor Convolutions
Insula
1st Temporal Convol
Lesion in Spoken-Word Construction-loss (Psycho-motor Aphasia)
Lesion in Spoken-Word Utterance-loss (Executive Motor Aphasia)
Lesion in Word Forgetfulness (Paraphasia verbalis)
Lesion in Sub-cortical Motor Aphasia
Bulbar motor neuron
Lesion in Sub-cortical word-deafness
Bulbar Sensitive neuron

FIG. 4. Diagram to illustrate probable relations of neurons to types of aphasia, paraphasia and the motor aphasias.

A substitute of other sensory and motor areas and connections would illustrate any of the remaining types of receptive, intermediate and emissive aphasia.

with various other regions of the brain mass, (intermediate and emissive areas). Finally, from the emissive (motor) areas only, pass impulses through other neuron processes to the base of the brain (bulbar nuclei, etc.) where, communicating with a second set of motor neurons, they are conveyed to the muscles of expression which they animate and control (see Figs. 1 and 4).

Hence it follows that even a limited damage to the brain, from any cause, may impair or destroy the functions or connections of one or more groups in the language area, thus giving rise to speech defects of varying degree and importance.

The study of speech and its disorders belongs both to Neurology and to Psychology and obviously requires a knowledge of the anatomy, physiology and pathology of the brain and its connections, with capacity for judging of their activities in health and disease.

LIMITS OF LEGAL IMPAIRMENT.

The literature of the jurisprudence of aphasia, is rather sparse, in comparison with the voluminous amount of matter in print, pertaining to the subject of aphasia in general. Bateman* states that there is "No code or law as to the legal capacity of aphasics in this (Great Britain) or any other country" * * * and that "each particular case would have to be considered on its own merits." It is quite evident that the limits of legal impairment differ widely from those of impairment in a purely physiological sense. Physiologically, aphasia of any degree, is to be looked upon as a break in the relationship of the individual to his environment; hence his general intelligence must suffer to some extent. It is quite reasonable to assume however, that the degree of mental impairment in a given case may not be

*On Aphasia and the Localization of the Faculty of Speech—London 1890, p. 302.

sufficient to be classed as insanity—nor yet be such as to prohibit the transaction of ordinary business affairs, or the making of a valid will. It is quite evident that one of the receptive centres may be damaged or destroyed without necessarily abolishing the function of others. One receptive area then may take the place of another that is disabled—sight for instance by enabling the subject to receive ideas by written, printed or sign language, may compensate for loss of word-hearing. A tailor for example may not recognize the spoken word *coat* though he hears it as a sound; he may however recognize the printed or written word, and also recognize the coat when seen and know its use and value. Such a case is here cited (see p. 393).

Even with the hearing and visual areas both destroyed by disease or absent from congenital defects, it may still be possible for the patient to recognize words by the muscular sense, as in the act of tracing the letters with his hands. The education of the individual would here be an important factor in deciding a given case, since a person who could not write could not avail himself of the help of graphic and muscular sense association.

An example of extensive replacement of the auditory and visual receptive mechanisms by the tactile and muscular senses is furnished in the case of Miss Helen Keller who recently passed with credit the entrance examinations to Radcliffe, (Women's Annex to Harvard College).

For the following notes on this case the writer is indebted to the courtesy of Mr. Michael Anagnos Secretary of the Perkins Institution and Massachusetts School for the blind, where the young lady received her education. Miss Keller who is now (Oct. 1896) aged sixteen years and four months, lost her sense of hearing (peripheral?); from a severe fever at the age of nineteen months; shortly after this she ceased to speak. She was taught to read the words of a speaker by placing two of her fingers on his lips; also by the "manual alphabet," (for deaf and dumb). She

conveys language to others by the manual alphabet, and by articulation of words learned by the lip-touching process above-mentioned. Her articulation is said to be very distinct. Her senses of smell, taste and temperature are highly developed and her powers of memory are unusual.

Smell and taste are of less importance in the construction of language, being applicable to a more limited range of concepts than hearing, sight and muscular sense. In rare cases however, their conditions may be of importance as bearing on the presence of hallucinations or illusions that would impair the reliability of the individual in a given case.

The question of the location of special psychic word-smelling and word-tasting centres cannot, in the present state of our knowledge be raised. Word-feeling areas would seem to have a necessary existence in educated deaf-blind persons, but their location remains unknown, though supposed to be in the sub-parietal gyrus (Inferior Parietal convolution) and callosal gyrus (Gyrus fornicatus) of the left hemisphere.

It is quite evident from these general considerations, that a conclusive opinion in a given case, is only admissible after a thorough examination of the functions of the receptive, intermediate and emissive mechanisms, by a competent neuro-psychologist.

It should not be forgotten that the language defects of some aphasics may lead to erroneous committal to an asylum ; and eventually to civil suit for damages.

Sanity having been established, the questions of jurisprudence which are most apt to arise in cases of aphasia, fall naturally under two heads.

FIRST—RESPONSIBILITY FOR ACTS DONE.

(*a*) Contracts already made, including contracts of marriage, business contracts and contracts made as a member

of a partnership or officer of a corporation, and affecting such partnership or corporation.

(*b*) Wills and testamentary acts.

(*c*) Acts as a public official.

(*d*) Evidence given as a witness, the value and weight to be attached to it.

(*e*) Execution of deeds, mortgages or powers of attorney.

(*f*) The involuntary use of improper or obscene language, (as in the case cited on p. 373).

SECONDLY—COMPETENCY TO LEGALLY PERFORM PROPOSED ACTS.

(*a*) To make contracts in an individual capacity or as a member of a firm or officer of a corporation—and to carry on business generally.

(*b*) To make a will or codicil or to vary the terms of former testamentary acts.

(*c*) To exercise the functions of a public official.

(*d*) To testify in judicial or quasi-judicial proceedings.

(*e*) To execute deeds, mortgages or powers of attorney.

(*f*) To choose place of domicile; to acquire a settlement in a poor district, or an eleemosynary institution.*

DISORDERS OF SPEECH-PROCESSES.

Passing to a consideration of the disorders of speech—from brain disease or injury: The term Aphasia is used as a general expression to signify speech loss, partial or complete, whether affecting the receptive (sensory) elements, the intermediate (constructive) apparatus, or the emissive (motor) mechanism of the brain cortex.

The following scheme of varieties of Aphasia may be found useful as indicating the relationship of the various

*For valuable suggestions regarding the above legal relations of aphasia, the writer is indebted to Mr. Joseph Cox Jr. of the Cincinnati Bar.

forms, though it includes several types not yet recorded as separated existences—viz: Word-anaesthesia; Pantomime blindness and pantomime forgetfulness. With this tabular scheme as a working basis, a consideration, *seriatim*, of the various types of aphasia in their forensic aspects will now be in order.

THE RECEPTIVE OR SENSORY APHASIAS.

(1) **Word-deafness.** *The lesion* is in or beneath the posterior third of the first and second temporal convolutions of the *left* hemisphere. (Fig. 3. A, Fig. 4, Fig. 5. 1.) It may be due to congenital defect, softening from vascular occlusion, destruction and pressure by inflammation, abscess, haemorrhage or tumor; and finally to degenerative changes (Paresis, senility).

Of these, by far the most frequent form is that due to softening from vascular occlusion. *The effect* on the patient is that he fails to recognize word-sounds as *words* though he hears them as *sounds*. He may also utter words but without relevancy to the words received and he fails to recognize this irrelevance. Such a person obviously cannot understand spoken speech, hence any answers he may give to oral questions have no value in a legal sense.

Much depends on the situation of the lesion in word-deafness. (*a*) It may destroy the cortical area itself (cortical word-deafness)—in which case the word-memories are gone and consequently of no use to the patient either in receptive or associative processes. (*b*) The lesion may be so situated as to merely cut off the incoming fibres (neuron-processes) *below* the cortex, (sub-cortical word-deafness, (Fig. 4) commonly accompanied by hemianopsia). In this case the word-memories exist in the cortex and may be in communication with other inlets as well as outlets. In other words, they may be *revived* by visual, gustatory, olfactory, tactile or muscular sense impressions. If so revived they may be emitted

intelligently by spoken as well as by written or mimic language, provided these other speech areas be intact.

Even in the cortical form of word-deafness it is evident that the *nature of the acts* under consideration is a factor of great weight in the decision as to competency and responsibility. For instance, in devising a will, the ordinary attachments and known natural affections of the individual may be accepted as evidence of the validity of a will which did no violence to those inclinations. In other words the emotional "tone" on which the affections depend may remain intact, even with judgment more or less at fault. This is a well recognized fact with regard to cerebral *motor* processes, where the power of "emotional" expression may animate muscles that are not under control of the will. The generally accepted explanation is that "emotional" motor processes are bi-laterally represented in the brain, and may act from either side. It is conceivable that the same relation may exist with respect to emotional "psychic" processes.

It is probably reasonable to assume therefore that testamentary capacity may exist in a given case, even where the transaction of a complicated business and the appearance as a witness in important cases might be detrimental to the interests of the patient or of society at large.

The use of outrageous, improper or obscene language by such a patient is obviously not attended with the usual responsibility for the act, as in a case recorded by Trousseau of a lady, who, without any accompanying paralysis, presented the following perversion of speech: "On receiving a call from a visitor, she rose to receive him with a benevolent smile on her countenance and, pointing to a chair, said —'Pig, Brute, Stupid Fool.' Madame B— begs you to be seated, said a relative who was present." * * * Trousseau adds that the acts of this lady seemed logical and sensible, and, strange to say, she did not seem to be aware of the

foul language she was using.* This was apparently a case of word-deafness associated with paraphasia verbalis.

The fact that agraphia or paragraphia commonly accompany word-deafness, probably depends on the accompanying word-forgetfulness (paraphasia verbalis) which is common. Even in the absence of this audito-motor paraphasia or word-forgetfulness (see Fig. 4), the proximity and probable involvement of the word-vision centre (supplied by the same artery) would be liable to lead to some confusion in writing, since the patient must depend solely on his muscular sense memories of written words. It must be borne in mind finally, that word-deafness, is, of all the common forms of aphasia, the most susceptible of recovery to a marked degree; partly from escape of some portion of the word-hearing area or its entering fibres from destruction; partly from subsequent education of the corresponding area in the right hemisphere. The state of the patient's auditory perception therefore, *at a given time*, is an important point.

The general capacity of the word-deaf aphasic therefore depends on his ability to correctly substitute for the lost word-hearing some other sensory word image, derived through vision, smell, taste, tact or muscular sense; and to correctly express his wishes by means of *written* or *mimic* speech. In the case of sub-cortical word-deafness the *expression* may possibly be correctly accomplished by spoken speech, even though the patient does not hear his own words.

(2) **Amusia** is analagous with word-deafness, in that the musical notes are heard as sounds but not recognized as music. Its chief importance lies in the fact that it is likely to be associated with or to be followed by word-deafness and paraphasia verbalis, since the music hearing area is believed to lie immediately anterior to the word-hearing

*Bateman op. cit. pp. 201-202.

area in the first and second left temporal convolutions.*

(3) **Auditory apraxia**, or object-deafness, is characterized by non-recognition of objects by their sounds, as for instance of a dog by his bark or of a bell by its note. It may accompany the two preceding varieties or exist separately. The lesion is believed to be in the posterior portion of the first and second left temporal convolutions (A, Fig. 3, Fig. 5, 3), and to be more extensive superficially and sub-cortically than the lesion in pure word-deafness. Its chief forensic importance lies of course in its frequent association with other auditory aphasias.

(4) **Word-blindness** and

(5) **Object-blindness** are apt to occur together in varying degrees. The *lesion* is in the "angular gyrus" (Fig. 3 V.) No distinct line of demarcation is known to exist between these two forms of visual aphasia, though they are clinically distinct in some cases. Hemianopsia is apt to be an associated symptom in both, especially if the lesion be sub-cortical in situation or effect. The nature of the lesion may be either of the pathological conditions noted under word-deafness. *The effect* on the patient in word-blindness is that he fails to recognize printed or written words *as words* though he sees them as marks or lines. Likewise in object-blindness (also called "mind-blindness" and "soul-blindness", improperly, it seems to the writer), common objects convey no meaning of their *nature* or *use* when *seen*, though they may be at once properly appreciated if felt and handled, (muscular-sense recognition.)

Mere object-blindness must be carefully distinguished from *Anomia* (see No. 21), or loss of *name* memories, since a case reported by Mills indicates that the two are apparently distinct. (See note on p. 381.)

It is evident that verbal responsibility exists in these patients provided that the aphasia is visual only and that no

*Edren—Deutsche Zeitschrift fur Nervenheilkunde Vol. vi (Analysis of 52 cases.) Quoted by Frankel Journal Nervous and Mental Disease. xxii—123. 1895.

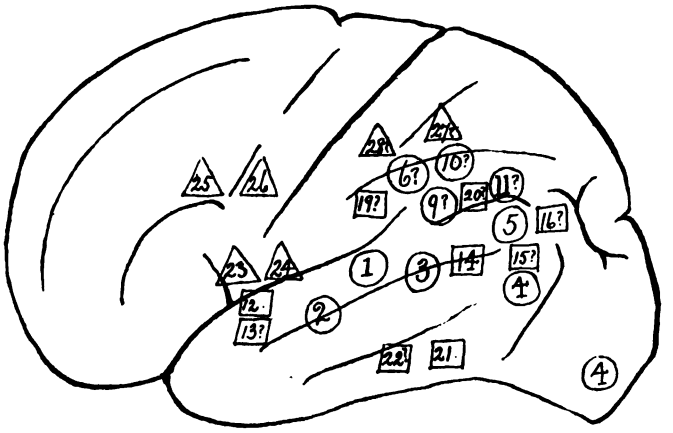

FIG. 5. Left cerebral hemisphere, outer surface.

Localization of aphasias; O receptive, □ intermediate, △ emissive. Doubtful or unverified marked ?. Numbers correspond with table, p. 370*a*.

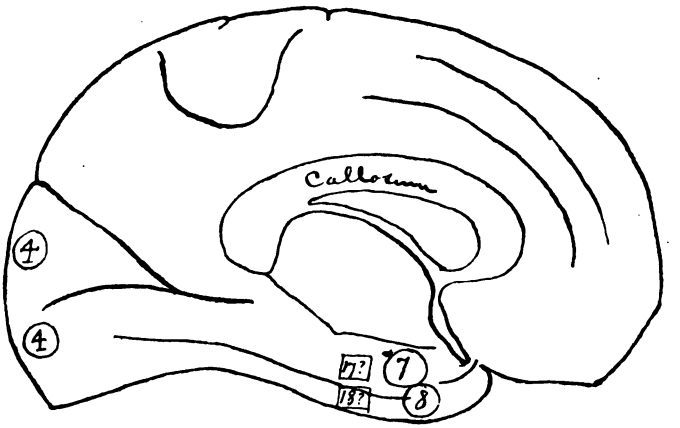

FIG. 6. Left cerebral hemisphere, inner surface.
Localization as on preceding figure.

serious mental defects complicate the case. Also, that testamentary capacity remains, so that the person may properly dictate the items of a will, or the terms of a contract, and carry on business of such a nature that he is not required to read or to judge of objects by sight.

It must be noted, however, that the inability to read, renders him peculiarly liable to fraudulent impositions; and that in the case of will making, the witnesses should be especially well qualified, should understand the terms of the document and satisfy themselves that the testator understands it, by reading it aloud to him, in addition to the ordinary witnessing of the signature or mark of the testator.

His signature, being made by the aid of the muscular and "graphic" memories, is of course acceptable; though he may be unable to read it *by sight*, he can do so by the hand-movement (*muscular sense*) memories of directing the pen.

Such a patient may also make a holographic will and read it in the same manner as he produces it.

(6) Visual Amimia or pantomime blindness needs only to be mentioned in this relation. It is not yet recorded as a separate type. The patient would be unable to recognize mimicry of words or ideas. The condition must be very rare, since it seldom accompanies even complete auditory and motor aphasia combined with some visual aphasia. The most probable seat of the lesion would be in the post-parietal region behind the motor areas proper and it would seem almost necessary for the lesion to be bilateral.

(7) Cortical Anosmia (smell-memory loss) and

(8) Cortical Ageusia (taste-memory loss) would also probably require bilateral lesions situated in the "tip" of the temporal-lobes, inner surface (uncinate gyrus). Their medico-legal importance would be, of course, unimportant.

(9) Word anæsthesia.

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(10) **Pantomime anæsthesia.** Pure cases of these forms of aphasia have not so far as the writer is aware, been reported. The location of the lesion which would cause these disorders is as yet uncertain, the tactile-muscular-and temperature-sense areas being considered by some investigators (Starr, Ransom, Dana, Mills, Lloyd, Deaver,) to be situated in the post parietal area (Fig. 3 above V) adjoining the motor convolutions for the trunk and extremities; by others (Horsley, Schafer, Saville, Ferrier, Yeo) to also extend to the limbic lobe (gyrus fornicatus), and hippocampal gyrus on the inner surface of the hemisphere. (Fig. 6. Above and behind "callosum.")

(11) **Myotactic apraxia** or object anæsthesia. It is quite conceivable that, in the case of the finer tactual manipulations, as in reading the blind alphabet, etc., there may be—probably is,a specially educated center on the left side, corresponding to the other language areas. A case illustrating the probable relation of the post-central (ascending parietal) and parietal gyri to finer tactile and muscular sense perceptions recently came under the writer's observation through the kindness of his colleague Dr. N. P. Dandridge. The man had his skull fractured by a brick, the wound involving the left parietal area and necessitating the removal of a triangular area of bone (about two and one-half inches in extent in each direction) over the leg and arm regions of the cortex. The dura was not opened. There was marked motor weakness but no speech defect following the operation. The motor weakness affected the right leg, arm and face muscles, diminishing in severity in the order named.

Complete loss of voluntary power over the anterior leg muscles existed, simply marked weakness of arm and face movements as compared with the opposite side.

The kneejerks were present, somewhat over active on both sides.

With his eyes closed it was impossible for him to name correctly coins and common objects with his right hand; or

even to tell their general form. He said a coin, for instance, was a "half moon". With his unaffected hand he could not only name the shape but the value of the coin.

As the case progressed favorably the return of power in the right leg, arm and face was complete in two weeks and was accompanied by return of muscular sense, so that coins and other objects could be correctly named with either hand. Burr* records a well-marked case of this form associated with visual apraxia, and refers to another. In neither case were ordinary touch, pain or temperature sensations deficient. While no precise localization of this rare lesion can be made at present it is reasonable to infer that it is not far from the angular gyrus (see 11 fig. 5).

The *effects* to be expected from tactile and muscular sense lesions are of course unimportant in a legal sense, excepting in the case of blind deaf-mutes, communication being then possible only by a very limited pantomime, which would itself be impaired if not abolished by the muscular sense lesion.

THE INTERMEDIATE OR "CONDUCTION" APHASIAS.

Our second group, the *Intermediate Aphasias*, are commonly known as "conduction" aphasias, which term was used by Wernicke to designate errors in the *transmission* of sensory language images from the receptive to the emissive (motor) areas. By some (Bastian) they are referred to as "Commissural Aphasias." Both terms seem objectionable to the writer, since "conduction" may also imply a lesion in the tract *from* the motor centres to the basal ganglia (sub-cortical and capsular lesions); and commissural is equally open to objection as applicable to the connections between the two hemispheres which are commonly known as commissures. The term "intermediate" is here used therefore in a functional sense to indicate the chronological order of the processes involved. The "intermediate" aphasias, in

*Journal of Nervous and Mental Disease, May, 1867—260.

this sense comprise the Paraphasias in general, together with anomia or concept aphasia. The leading characteristic of the paraphasias is that spoken word-sounds, visual word-appearances, etc., are correctly *received*, recognized and *retained* in their appropriate areas, but are *lost in transmission* to the motor areas. Hence the word emitted is not properly related to the word received; or wrong words are emitted unintentionally. "Amnesia verbalis" and "Amnesic" aphasias are terms that have been applied to these forms, but amnesia (memory loss) at the receptive area does not really exist as above explained; it is transmission to and *re-collection* at another (psychic or motor) centre that is at fault. In other words, the train starts but does not arrive, owing to imperfection in the track. The patient can hear, understand and speak correctly, but his answer is apt to be ill-chosen and irrelevant to the question asked; at the same time he is aware of the irrelevancy though he cannot correct it by spoken words.

Non-re-collection aphasia would be a good name for this type.

Word-deafness is necessarily accompanied by paraphasia (word-forgetfulness) but the converse does not hold true as numerous cases attest. This is apparent from the diagram (Fig. 4) which illustrates the locations of the lesion in the types of word-deafness, word-forgetfulness and motor aphasia.

From this it is apparent also that sub-cortical lesions may give rise to *conduction* defects, without any loss of word recollection. In other words paraphasia properly is a defect of association not of conduction in its general sense.

(12) **Spoken-word forgetfulness** as an isolated form of aphasia, is due to a lesion in or beneath the insula (Island of Reil) as shown in the diagram (Fig. 4.) It causes the patient to utter words incorrectly or irrelevantly to those received. He recognizes his errors however by means of the intact word-hearing area; though unable to correct them

by *spoken* speech he may do so by writing or pantomime. This is an important difference between this form and simple word-deafness, since in the latter the errors are unrecognized and go uncorrected.

Not only may a definite and demonstrable lesion cause this and other forms of Paraphasia, but simple "general enfeeblement" of the brain (Wyllie) may also be attended with like results. This is one explanation of the existence of word-forgetfulness in advanced age and also as following exhausting diseases. In such cases we must assume an impaired nutrition in the associative (intermediate) mechanisms, or neuron-processes.

(13) **Paramusia** and

(14) **Auditory Parapraxia.** These possess merely a scientific interest as possibilities.

(15) **Paralexia.** Non-re-collection of word meanings, or loss in transit to emissive areas may apply to printed and written words (paragraphia) separately, hence both should be tested. The pure form would probably be due to a sub-cortical lesion, beneath the angular gyrus. (Fig. 3 V. Fig. 5, 15).

(16) **Visual Parapraxia** would be similar in effect and location as the preceding (15) object defect being substituted for word defect.

(17) **Parosmia** and

(18) **Parageusia** would possess clinico-pathological importance only. (See 7 and 8 for probable location, etc.)

(19) **Myotactic Paramimia** (pantomime forgetfulness).

(20) **Myotactic Parapraxia**, (object-touch forgetfulness) need only to be mentioned. They would probably bear a sub-cortical relation to the areas affected in Myotactic amimia and apraxia (post parietal convolutions ?)

The legal relations of the various types of Paraphasia will naturally vary within wide limits and cannot be definitely outlined. The actual state of the individual case and the concomitant circumstances must be carefully

weighed in every such instance. A simple paraphasia verbalis is not in any way incompatible with holographic will-making since the auditory and visual receptive centres are both intact and may still be in relation with the graphic area. A deep lesion of the Insula however, in audito-motor paraphasia (spoken word forgetfulness) may also cut off the communication with the graphic area, in which case the visuo-graphic mechanisms may not suffice for correct conveyance of ideas. It must be borne in mind moreover that deep lesions of the insula are also apt to affect the striate body and the internal capsule and in this way interfere with graphic as well as spoken emission on the same side. Even this would in some cases leave the opposite graphic motor area (for the left hand) available for simple written expressions of assent and dissent at least.

Finally, of the entire group of paraphasias it may be said that they rarely occur alone. They are most likely parts of an extensive lesion and consequently accompanied with much diminution of intelligence and confusion of thought (Kussmaul). Again improvement may occur so as to materially change the decision in a given case, at a subsequent examination. They may also lead to questions of competency to pursue a given occupation—a physician for instance afflicted with paraphasia verbalis or paragraphia may write a prescription for the wrong medicine or dose.

(21) **Anomia** (name-memory loss) has yet to be located as a pathological entity.*

(22) **Paranomia** (name-forgetfulness) as already explained. (See foot note p. 381), the case reported by Mills as evidence of the existence of a special naming centre in the left third temporal convolution, seems to belong to the group of

*The case reported by Mills (Text-book of Nervous Diseases, Dercum, 1895, p. 427), would appear to the present writer to be one of Paranomia (name *re-collection* loss), rather than Anomia proper; since the patient recognized the names as correct *when they were spoken to her.*

paraphasias (non-recollection of names) rather than to name absence.

THE EMISSIVE OR MOTOR APHASIAS.

These, the first recognized and best known of all the language defects are also of greatest practical importance in a legal sense, since in the vast majority of persons probably, the *construction* of a word in a psychic sense, usually, if not always precedes its spoken or graphic utterance; probably also in many cases its pantomimic utterance. While it is claimed by some* that *pantomime* is the original elementary form of speech, the fact remains that in civilized man, spoken speech has supplanted it to such a degree as to cause a natural de-volution of pantomime by disuse.

While as above stated the motor aphasic is also usually agraphic he is not invariably so. The exceptions are generally believed to be due to the sub-cortical location of the lesion, (see Fig. 1) hence the actual word planning areas (M. Fig. 3, also 3d. frontal convolution, Fig. 4.) is not destroyed but has lost its power of emission to the word utterance mechanisms. It may still be in communication with the graphic centre, (2d. Frontal Fig. 3 G) and hence the power of writing may be intact for practical purposes.

Still another and perhaps better reason for the retention of graphic expression after loss of motor speech, lies in the probable subdivision of the motor-speech processes into two distinct areas—namely psycho-motor and executive motor as indicated in our scheme of aphasias on p. 370*a*.

Cases cited by Broadbent and Mills† appear to warrant this separation on clinico-pathological grounds. Wyllie (op. cit. pp. 317, 318) also alludes to this separation of func-

*Vossius, Kleinpaul—quoted by Bateman op. cit. 170-171.

†Mills. Aphasia and the Cortical Mechanism of Speech—A Textbook on Nervous Diseases by American Authors. Dercum Phila. 1895, p. 434.

tional areas as a possibility and (p. 328) reports a case, bearing on this interpretation, but without autopsy.

A case of the writer's furnishing strong additional evidence of separateness of these two functions of word-construction and word-utterance, is here added.

J. B., colored, aged 55, a tobacco warehouse porter by occupation was admitted to my service at the Cincinnati Hospital on January 6, 1896. Power was good and equal in arms and legs. Jawjerk and double elbow-jerks present with slightly increased knee-jerks. No pain or tenderness. Heart and urine normal.

On arrival he was conscious but mentally confused and gave irrelevant answers to questions, usually answering all questions with "yessir" (paraphasia verbalis). He seemed to understand what was wanted and was apparently much annoyed by his wrong answers, especially when asked his name, which he was totally unable to give until prompted. Asked if it was "John Smith" or other erroneous name he would shake his head negatively; on pronouncing "Jackson Butler" however he at once brightened and assented vigorously; and with some difficulty and slowness said "Jackson Butler." Once said, he repeated it over and over frequently, seeming to fear to lose it. Words received were evidently understood; common objects were correctly pointed out and their uses comprehended though their names could not be pronounced voluntarily, but words pronounced to him could be repeated immediately in the case of some words.

A notable exception to this last statement, was the word "no." On being asked to say "no" he seemed to make a severe mental effort and finally said "I can't say no." Gowers* records an instance identical with this in a case of motor aphasia. This was after he had been in the hospital for two days and had increased his vocabulary in several directions.

*Manual of Diseases of the Nervous System, 1893, p. 113.

Unfortunately his writing could not be tested on account of his lack of education in that direction, but he could make printed letters A, B, X, etc., from a copy; could pick them out of a group, but could not write them at command, and seemed fairly intelligent for his calling and station in life. Diagnosis–cerebral thrombosis involving 3d frontal convolution.

In a month he was discharged practically well so far as his conversational needs were concerned, but could not pronounce words like "Constantinople," "Generalissimo," etc.

He returned to his occupation, at which he worked successfully for seven months, when he was re-admitted to the medical ward of the hospital for an attack of "diarrhœa." On admission his pulse was 96, temperature 97.6, respiration 16. Urine contained albumen and sugar. Thirteen days later he was reported "improving;" and while sitting at the breakfast table, suddenly fell to the floor unconscious, with right hemiplegia (face arm and leg). Temperature 98.4, pulse 30, respiration 24. Pupils dilated, irresponsive conjugate deviation of eyes to left. No vomiting; no convulsions. Transferred to Neurologial service. Four days later he seemed to recognize and follow movements of objects with eyes and head; was mentally brighter but did not recognize his spoken name; could hear sounds.

Diagnosis: Cerebral thrombosis of left middle cerebral artery involving branches to motor speech and auditory speech areas, with the central motor convolutions. He gradually sank and died on the thirteenth day after his stroke.

Autopsy by my colleague Dr. J. H. Landis, September 16, 1896.

The foot of the left third frontal convolution, (Fig. 3 M.) (Word-planning area of Broadbent and Wyllie) was occupied by a cyst the size of a small cherry containing a whitish diffluent material (old "atheromatous abscess.") The branch of the Sylvian artery leading to it was obliterated

(inferior external frontal.) This lesion was evidently the cause of the first attack of motor aphasia nine months before, and explains the presence of pure voluntary motor aphasia (word-construction loss) with retention of the power of repeating words to dictation at that time, by means of the "word-utterance" area (of Broadbent and others) in the foot of the central convolutions.

The second attack of complete auditory and motor aphasia with hemiplegia was explained by an extensive recent red necrotic softening involving the left central and first temporal convolutions, the insula, and the striate body. The larger blood-vessels throughout the brain were the seat of extensive arterio-sclerosis.

Motor aphasia, as shown by the first attack in the above case, is capable of improvement; even of apparently complete recovery in some cases. This improvement is due to two factors–viz: (*a*) recovery from pressure of an undestroyed portion of the third left frontal convolution. (*b*) Subsequent education of the right third frontal, previously dormant. In children this latter mode of recovery is often so complete, that in after life no language loss is observable.

Taking up *seriatim* the various types of motor aphasia indicated in our table we have:

(23) **Psychic motor aphasia** or spoken word-construction loss (loss of word-plans or psychic spoken memories). This, as shown by the above case and others recorded, has probably a distinct existence as a separate form.

The *lesion*, as just cited, is situated in the "foot" of the left third frontal (Broca's) convolution (Fig 3 M–anterior half of shaded portion. Also Fig. 4.)

The *cause* is most commonly a vascular occlusion (embolism, thrombosis), hæmorrhage or traumatism. The *effect* on the patient is a loss of the power to *frame ideas into words*. The ideas, made up of sensory receptive combina-

tions exist, but the vehicles for their arrangement for expression are absent. (See Fig. 1–spoken-word plan.)

As already stated (*vide ante*) the motor aphasic is usually also agraphic if the lesion is in the word-*planning* area of Broca's convolution as it commonly is. (*a*) Should the lesion be limited to the word-*utterance* portion of the motor area (see Fig. 4, central convolutions) it seems quite possible that word-planning may still exist and that the plans may be transmitted to the psycho-graphic centre and from thence to the motor-graphic area for emission as written speech.

(*b*) Should the lesion however destroy the word-planning area itself, nothing remains with which to express his ideas but *pantomime* pure and simple. Pantomime probably does not primarily express *words*, but the *ideas* which precede word-planning and word-utterance; in this sense it is more elementary than spoken speech as is also evident from its extensive use by infants and savages.

Testamentary capacity is evidently not abolished by either of the two conditions just mentioned, since in the first writing and pantomime and in the second pantomime expression would remain. In both, the receptive sensory areas and their intercommunications are intact so that ideas based on them are correctly formed.

Simple business acts, such as required only the expression of assent and dissent, would also be valid in such a case for similar reasons. The main questions to be settled are: (*a*) Does the patient comprehend the nature and relations of the proposed act? (*b*) Can he express assent and dissent with certainty? Numerous cases of motor aphasia possessing important legal relations are on record, of which the following cited by Bateman (op. cit. 301 *et seq.*), may be here referred to.

"As far back as 1743, long before the attention of the profession had been directed to the subject of aphasia, a resident of Muenden, who was deprived of the power of speech,

applied to the Hanoverian government for permission to make a will in favor of his wife by means of signs; and the court acknowledged the validity of the act.*

The fact of the will in this case having been made by means of *signs* (pantomime) is susceptible of one of two interpretations.

(*a*) That the testator had never learned to write; (*b*) that the aphasia was due to destruction of the written word-planning area and consequently was accompanied by agraphia.

(24) **Executive motor aphasia** or Word-utterance loss, without loss of word-planning capacity, may be due to a lesion in either of two locations: (*a*) a cortical lesion, situated at the "foot" of the pre-central gyrus, (ascending frontal) immediately adjoining the foot of "Broca's" convolution proper. (*b*) To a sub-cortical or capsular lesion blocking the motor emissive tract on its way to the bulbar nuclei. Simple word-utterance aphasia is obviously of less importance in every way than the preceding form (word-construction loss.) The liability of the lesion to also damage the immediately underlying *insula* however and thus cause a paraphasia verbalis (see ¶ 12) must be borne in mind. Even then graphic and pantomime utterance would probably remain and would be sufficient for will-making and the transaction of uncomplicated business. In other words, the subject of simple *word-utterance aphasia* can receive, understand, and convey assent or dissent by writing and pantomime to propositions put before him by spoken, written or mimic language. "An aphasic discharged during a period of five years the functions of Mayor and of Municipal Councillor, by simply writing his name to the necessary documents, which he had learned to do with his left hand. He also, with his *left* hand wrote, at intervals, a holographic will, perfectly correct in every respect; the validity of this document was recognized by the law court.†

*Hofhauer—Traite de Medecine Legale, Paris, 1827.
†Billod—Annales Medico—psychologiques, tome xviii.

This case would appear to be one of lesion of the word-utterance area, involving also the graphic connections or their sub-cortical emissive fibres of the *left* hemisphere; the word-planning area being intact and its productions transmitted to the *right* hemisphere (graphic area) whence they secured outlet through the ordinary channels to the left arm and hand.

Another case, illustrative of the combination of motor aphasia and agraphia, with hemiplegia as well as of the importance of small details in a legal sense is as follows. "The testator, the Rev. J. T. L., a widower, 63 years of age, was engaged to be married, when he was suddenly seized with right hemiplegia and aphasia. Although unable either to speak or to write, he could make himself understood by those around him by signs; and by the language of gesture he succeeded in conveying to his medical attendants that he desired to make a testamentary disposition in favor of Miss R., whom he had intended to make his wife. A card was procured and upon it, by the direction of the testator, the following words were written: "£30.000 to Miss R., to be tied up to her for life, and after her death to come back to my family, and be divided fairly and equally. This document was written by one of the medical attendants; the testator then made a mark, not at the bottom, but in the middle, of the card, through the word 'life'; one of the doctors then wrote diagonally from this mark towards the right hand upper corner of the card, the words 'Mr. L's mark', and they both attested the execution of the document by placing their initials on the back of the card, with the words 'Witness to mark', and followed by the date, November 20, 1885." Evidence was produced to prove that he showed this card to the lady whom he had intended to benefit, telling her (by signs probably L.) that it was for her, and that he wished her to keep it.

The mode in which the testator communicated his wishes was as follows: He made signs for writing materials; his

wishes were interpreted by means of signs, and then written down on the card. He held up his hand, extended his five fingers, and was asked if he meant 'thousands,' he bowed assent. He then closed his hand, and opened it in the same way, implying ten; this operation was repeated until it amounted to thirty, and he then dropped his arm down. Testator was then asked whether he wished Miss R. to have thirty thousand pounds, and he nodded his head.

In order that there might be no mistakes about his wishes as to details, he was asked whether Miss R. was to have this sum absolutely; he signified dissent, but on being asked if it was to be hers for life and afterward revert to his family, he bowed his head.*

Bateman's comments on this case are: "It will be observed that the nature of the testators wishes was ascertained principally by putting questions, by which he signified approval or dissent by nodding or shaking his head as he lay in bed. From a consideration of the above facts, it seems clear that the witnesses did correctly interpret the meaning of the testator's signs, which evidently expressed his testamentary wishes; his gestures answered to rational conceptions, and were therefore external but not oral manifestations of the *verbum mentale;* and this view was taken by the President of the court, who held that the writing on the card constituted a valid testamentary document, that the writing of the witnesses on the back of the card was also a sufficient attestation, and that the will would have been allowed to stand *if the testator's mark had been placed at the bottom or foot of the card;*† but as the mark was made in the middle of the card, its position was not such to satisfy the provisions of the Statute of the Wills Act (iv. Vic., Chap. 26. sec. 9) or of Lord St. Leonard's Act (xv. Vic., Chap. 24 sec. 1) and the instrument was not duly executed, and consequently not entitled to probate, which was accordingly refused."

*Law Reports, Probate Division, Vol. xii, 1887, p. 8. (Great Britain.)
†Italics by present writer.

It is hardly necessary to remark that the defect in the document was not due to the speech defect, but to a simple error of legal technique.

One more case, evidently of damage to the spoken word-utterance and written word-planning areas, and bearing on the question of capacity to manage ordinary business affairs is the following: As Bateman remarks "it is all the more interesting as it formed the subject of a formal discussion in a scientific body, perhaps the most competent in Europe to deal with this question—La Societe de Medecine Legale de Paris."

"A merchant aged 62, having acquired a fortune in his business, was attacked with right hemiplegia and complete aphasia. After some months of treatment, including a season at the baths of Balaruc, he improved so as to be able to walk, although imperfectly; the arm however continued quite paralyzed, and the aphasia persisted. Later on the paralysis in the arm yielded somewhat, but the power of speech was limited to the sounds—O, o, a, qui. Whatever was said to him he replied by these same syllables; but he was able to make himself understood by articulating these words with different intonations, accompanied by very expressive signs executed by the head or by the left hand. His wife, more accustomed than others to his language, interpreted what he wished to say; and if she happened to convey a wrong notion of what he desired to say, he showed great irritation, and endeavored to make himself better understood by more expressive gestures. As his right hand was paralyzed, he had learnt to write with the left hand; but if left to himself *he could not write spontaneously, without copying*—he required a model under his eyes, and could only recopy what was written and set before him.

"In order to test the degree to which he had retained his intelligence, it was pointed out to him that it would be to his advantage to collect his rents every month, instead of allowing them to accumulate for six months; he indicated

very clearly that he understood this advice, and that he entirely approved it, and he informed his wife that for the future he wished his rents to be collected in the manner advised.

"It was evident that, in spite of his speechlessness, he had in a great measure retained his intelligence and his power of volition, and he knew perfectly well the state of his affairs. He frequented places of public resort, and would pay for what he ordered without making any mistake; he was in the habit of seating himself near those who were playing at cards, and he would intimate his approval or dissapproval of their playing, and even venture upon advice by means of signs, which testified to the preservation of his intelligence."* The relatives of this gentleman had demanded what the French Law calls an "interdiction," and after a prolonged discussion, the Societe de Medecine Legale decided that his condition did not justify his being deprived of his civil rights; and the Tribunal at Avignon, to which the case wes subsequently submitted, gave a decision in conformity with the views of the "Legal Medical Society."

Bateman's comments in this case are: "There cannot be a doubt about the propriety of the above decision. This gentleman was the subject of motor aphasia; he was unable to express himself by articulate language, but he possessed to an eminent degree the language of signs. It will be observed that he was also the subject of agraphia, for although he could copy, he was unable to give spontaneous expression to his wishes by written language; he could originate nothing in writing; if his model were withdrawn he was incapable of writing a single letter."

Hence his aphasia was of two distinct types, according to the scheme here adopted—viz: (24) Executive Motor Aphasia and (25) Psychic Agraphia, implying lesions respec-

*Annales d'Hygiene Publique et de Medecine Legale, tome xxxi. p. 430.

tively of the foot of the ascending frontal (pre-central) and of the second frontal convolutions—or of their sub-cortical communications.

Diller† has recorded two cases of motor aphasia probably of the executive form with legal bearings as follows:

A retired physician aged 60, had an attack of right hemiplegia with aphasia, recovered and transacted important business affairs for years. His will was contested on the ground of incompetency as having been made after his paralytic attack. During the trial a second will made some years *before* his aphasia was produced, which agreed so well with the disputed one that the legal proceedings were terminated.

The second case, a lady 63, also had right hemiplegia with incomplete motor aphasia. The doctor believed that she was incompetent to enter into civil contracts or to receive and pay out money constantly as her business required, but that she was able to give intelligent assent or dissent to any single business proposition and to give a power of attorney to her children.

(25) **Psychic agraphia** (written-word-construction loss). The existence of actual proof of this type has been questioned.*

Since that date, however, Eskridge‡ has put on record an undoubted case of this form where the patient, though unable to arrange letters into words, "wrote a good legible hand when the words were spelled for him." Operation and removal of a cyst from the foot of the left second frontal convolution, much improved his power of spelling and voluntary writing. A second case is quoted in this article (*vide ante* p. 391.)

The legal bearings of psychic agraphia would be limited to the consideration of possible errors in written documents.

†Journal Nervous and Mental Disease, May, 1894, p. 293.
*Mills, "A Text-Book on Nervous Diseases by American Authors, 1895," p. 436.
‡Medical News, Philadelphia, August 1, 1896, p. 122.

In every other respect the purely agraphic are competent legally if sane.

(26) **Executive agraphia** (written-word-utterance loss). This form in itself is of even less importance legally than the preceding. The lesion may be located either in the left arm and hand area, immediately posterior to the 2d frontal convolution, or in the centrum ovale or internal capsule, thus impairing conduction to the spinal centres. In the latter case compensation would probably be established in some degree by way of the callosum so that intelligent writing could be effected by means of the motor centres of the opposite hemisphere.

(27) **Pyschic motor amimia** or

(28) **Executive motor amimia**† alone would be of even less importance than the Agraphias and do not require consideration here.

IRREGULAR AND MIXED FORMS OF APHASIA.

It is important to bear in mind the possible, even probable, presence of "mixed" forms of aphasia in any given case, due to the fact that the same artery (middle cerebral) supplies, through its various branches, the Auditory, Visual, Motor, Graphic and probable Pantomimic cortical areas.

Occlusions of branches of this vessel are apt to give rise to a confusing association of the various forms of speech defect as well as the extension of a given area of necrotic softening from time to time by occlusion of additional branches of the same trunk. Thus in the case of a man aged 41, a tailor by occupation, recently under the writer's care, there appeared in succession, during a period of six months, (*a*) Motor aphasia psychic and executive, (involve-

†Grasset (Le Progres Medical, 1896) records a case of Motor Amimia in a congenital deaf-mute. The patient had lost the power of expression by the sign language with the right hand, but retained the use of the left for language purposes. See Jour. Amer. Med. Assn., Nov. 28, 1896, p. 1162.

ment third frontal and precentral gyri). (*b*) Paraphasia (insula) i. e.: patient replies to all questions with the one expression "Doneshes" (Gibberish Aphasia). (*c*) Paragraphia (probably in this case capsular in location) since with his left unparalyzed hand he made an attempt, partly successful, to write his own name, and could reproduce it so as to be recognized from a written copy.

(*d*) Auditory Aphasia or word-deafness (first temporal) not recognizing eventually such words as hand, head, eye, etc., though when he first came under observation he could pick out button, coat, pencil in addition to parts of his own body at command.

(*e*) Visual Aphasia, word-blindness at first and object-blindness later (angular gyrus). While at an early stage of his illness he could select his own written name from a group of others, he could at no time point out the individual letters composing it, nor put them together to form the name. (Aliterarum without complete Alexia). Later he lost all recognition of written or printed words, his own name included. He could recognize the uses of some objects with which he was familiar, as shears, and when given a dressing forceps and cloth with signs indicating that he was to cut the cloth, he smiled and pointed to the absence of cutting edge on the forceps. Given a bottle and a cork together, however, he failed to connect them in any way; and much effort and uncertainty was manifested before he recognized the use of a watch key.

(*f*) Paramimia, due in part at least to the right hemiplegia which accompanied his aphasia. Facial and emotional expression were well preserved; smell blunted and taste apparently almost absent, so far as could be determined. These defects left the patient on the receptive side (see Fig. 5, No.'s 6 and 10) the muscular and tactile senses (uneducated for words in his case) with temperate sense and pantomimic appreciation. On the emissive side only emotional expression and pantomime remain and the latter impaired

by the right arm palsy, though he looks intelligent and shows an earnest desire to express his wants. The constantly recurring utterance of the expression "doneshes" (gibberish aphasia) with a lively attempt at pantomime by the facial muscles and left arm and hand, with obscure vocal sounds was all that remained of the language faculty. In addition he could manifest emotional expression to a considerable degree, smiling when shown a comic picture unexpectedly. He does not seem to have full appreciation of his deplorable state, as shown by the absence of marked mental depression. The lesion in this case is probably vascular occlusion (thrombosis) gradually involving additional branches of the left middle cerebral artery. In every legal aspect of course the words incapacitated and irresponsible apply to this case.

Other "irregular" varieties of aphasia requiring separate consideration are those of temporary character. Those due to feebleness and exhausting illnesses have been already mentioned, Other forms are the Epileptiform and Hysterical. Bateman (op. cit. p. 136) cites an interesting case which he classifies as Epileptiform, but which many would be inclined from the history to consider Hysterical. "The salient features were total loss of speech of an intermittent character, lasting from a few hours to six weeks; the suspension of the faculty of articulate language always coinciding with pain at the nape of the neck and its restoration being invariably accompanied by pain in the lumbar spine." 'True hysterical' (or cortical functional) aphasia does occur however, not including in this term the simple loss of *voice* so common in hysterical conditions; this latter is aphonia, but not aphasia.

An example of recurring attacks of functional cortical ("hysterical") aphasia occurred in a patient of the writer's, a widow, 46 years of age, who was passing along a crowded thoroughfare with a satchel containing several hundred dollars, the proceeds of the sale of her entire property.

The satchel was snatched from her hand by a man who escaped with it. From that moment she was speechless, not simply voiceless but appeared to lack the power of cerebral word-construction. She also manifested in a marked degree the emotional temperament, contracted visual fields and other "stigmata" of the hysterical constitution. Under general nutritive and hygienic measures she recovered in a few weeks, but has had two recurrences, from slight causes, both yielding to treatment in a few days. One of these attacks followed a fall with unconsciousness according to her statement. The absolute speechlessness in the first attack, prevented out-cry and was the cause of her failure to secure assistance in stopping the thief. During these attacks, questions of legal competency might easily arise. Between the attacks, however, there can be no doubt of the patient's capacity to conduct ordinary affairs with average judgment for her station in life. She earns her living as a seamstress and is in every way logical and proper in her conduct.

To sum up, it is apparent from the foregoing remarks on the genesis and nature of speech and its disorders, that the inter-relations of the individual with his environment as regards language, depend on three factors (see Fig. 1): First, sensations received from without and recognized as percepts by the brain.

Secondly: Concepts or ideas formed by the brain from association and combination of these percepts.

Thirdly: Motor expression of these concepts or ideas by spoken words, written words, pantomime, and by vocal sounds that are not words, as shrieks, exclamations, etc.

Disorders of either series of processes will impair language as a whole. The legal results of this impairment depend on its *degree* and *nature* and may be summarized as follows:

Sanity established, any legal document should be recognized when it can be proved that the person making it can

understand fully its nature by any receptive channel, (viz: hearing, vision, or muscular sense) and can, in addition, express assent or dissent with certainty to proper witnesses; whether this expression be by spoken speech, written speech or pantomime.

As regards responsibility and competency for other acts than signing a will or document, the form of language disorder present, and its relations with the nature of the act must be carefully considered. In other words cases of this latter class must be individualized rather than generalized.

THE MEDICO-LEGAL ASPECTS OF PURPURA HEMORRHAGICA.

BY

DAN. MILLIKIN, M. D., HAMILTON.

About ten years ago a little patient of mine, perhaps six years of age, developed the curious disease, or symptom, called purpura hemorrhagica. To you who have seen typical cases of this rare affection, I need not say that he presented a shocking appearance. Here and there were fresh effusions of blood beneath the skin. At certain points there were patches undergoing absorption, with hideous display of color, as in an old bruise. Full half of his surface was thus fantastically decorated.

Soon afterward it was my lot to see two similar cases in consultation. Both died quickly with symptoms of apoplexy, which at first indicated localized disturbance of the brain, as if by a small clot, until coma drew down the curtain and obscured all cerebral symptoms.

About this time there came to me a lawyer who placed in my hands a copy of the findings of a coroner, and the testimony on which the verdict was based. He desired to be instructed as to the medico-legal aspects of his case. His client was a woman, charged with murder. She was

of the much-despised class of step-mothers. She had been a woman of loose habits, fast life, bad associates. The boy whose death was charged to her was a feeble little fellow, undeveloped as to his body, bright as to his mind, willful and disobedient, incontinent of urine by day and by night, and thoroughly troublesome. It was in evidence that his father and his step-mother had often whipped him severely, most frequently for his unfortunate habit of wetting his clothing and his bed. It was in evidence, also, that the woman, his step-mother, was violent of speech and that she had made terrible threats as to what she would do to the poor little brat, and that these threats had become more bitter, loud and shrill, in a terrible crescendo, until one evil day when the woman went to a neighbor's house and said that the boy had fallen down two steps and that he was so sound asleep that she feared he had hurt his head.

It was not long until his unconsciousness lapsed into a more merciful and eternal oblivion. Then came suspicions, questions, rumors, accusations and the coroner's inquest.

Competent medical gentlemen made a necropsy for the coroner. They described ecchymoses and suggillations, new and old, of divers colors, and of great and small extent. Under the scalp, at one certain point, they found a large extravasation of blood. Beneath this they found an intracranial clot, lying upon the brain itself. It was sufficient to cause coma and death by pressure. They reported that for several days the child must have been subjected to the severest percussion compatible with life, and that on the day of his death he had received some sort of violence on the head which had produced the fatal hemorrhage within the cranium. Other evidence harmonized with that which the forlorn little corpse adduced. The coroner rendered his verdict. The step-mother narrowly escaped lynching, so great was the indignation against her, and she was very glad to be escorted to the county capital to lie in until the time of her trial.

The attorneys said that they would be able to break the force of the frightful threats which she had uttered against the poor little boy by showing that through all of her life she had been violent of speech to the very extremest degree. They could also bring evidence to show that she was really very fond of children and patient with them, even while pouring out threats and abuse. There was nothing more to be adduced in extenuation. She was doomed by appearances, by public opinion and by the expert pathological testimony before the coroner.

An interview convinced me that the woman was a coarse, undeveloped savage, transparent as a child, and that she was not a murderer. I was also able to develop from my interview that the little boy was probably a victim of one of the more fulminant forms of purpura.

The case came to trial and the witnesses for the prosecution soon found themselves testifying, under cross-examination, that the apparent bruises on the little body—old and new, violet, indigo, blue, green, yellow, orange and red—might have been mere extravasations produced by disease alone, and that the clots under the scalp, as well as the great intracranial clot, might have had a like origin. A doubt was raised as to the guilt of the woman and she, getting the benefit of the doubt, went free.

It is the object of this brief paper to suggest to you, first, that, in the absence of a positive breach in the integuments or of the underlying soft parts, there is no coarse method of distinguishing the ecchymoses of purpura from the true suggillations produced by mechanical violence. The man does not live who can say of one case, *This is a bruise*, and of another, *This is a morbid extravasation due to disease of the blood or blood-vessels.*

Secondly, I would note that there is not at present any microscopic test which will enable us to determine by a study of blood or vessels, whether a given extravasation is due to violence or to disease.

It follows therefore, that, in the present state of our knowledge no conviction for murder can be obtained where the only evidence consists of abundant extravasations upon the dead body and where there are no living witnesses to the infliction of lethal violence.

There is, therefore, the most urgent need for a post mortem test which will determine in any case whether the blood or body is of a subject of purpura. I might ask the histologists and chemists to give us also a test for hemophilic blood, but hemophilia has a history, whereas the fatal forms of purpura are usually fulminant in their course, and can scarcely be said to have a history. The appeal is made to adepts in chemistry and microscopy to study every fatal case of purpura in order that some distinctive chemical or histological character may be discovered, for it is only by such a test that it can be determined that cases such as I have reported are, or are not, homicidal.

At present our ignorance is dense. We have gone no farther than to discover that there is sometimes a great diminution of red corpuscles, in purpuric conditions, though this is not constant. There is sometimes a great increase of fibrin, and sometimes a notable decrease. The white corpuscles are sometimes actually increased in number and sometimes relatively increased in number, but this is not constant. We are informed that the red corpuscles are sometimes deformed and sometimes nucleated, but that this character is not constant. And, in short, the diagnostic sign of purpura—a sign to be found in the dead body—much as it is needed in forensic medicine, has not yet been attained.

CHAPTER XI.

REQUIREMENTS FOR ADMISSION TO MEDICAL COLLEGES.

BY

C. F. CLARK, M. D., COLUMBUS, O.

Under our present laws a diploma from a medical college which is recognized by the State Board of Medical Registration and examination entitles the possessor to a certificate qualifying him to practice medicine in the state of Ohio. The Board of Registration, at its meeting on March 8, 1897, adopted the following resolution:

Resolved, That on and after July 1, 1897, no medical college shall be considered as a medical college in good standing, as determined by this Board, unless the Secretary, Dean, Registrar, Chancellor or other officer who may be custodian of records of said college, shall submit evidence satisfactory to this Board that graduates of said college who are applicants for certificates have complied with the entrance requirements laid down by the American Association of Medical Colleges. Any institution shall not be considered in good standing for any year in which said college failed to live up to the rules laid down in its own announcement, and before its standing is established may, at the discretion of this Board, be required to furnish satisfactory evidence that it has complied with such rules.

The members of this society, being all graduates in medicine, are familiar with the free and easy way in which students have heretofore been admitted to our medical schools, and do not need to be reminded of the fact that many men have been allowed to enter and graduate who should have been required to devote several years to pre-

paratory work before undertaking so serious a study as practical medicine.

Indeed, those of us who are familiar with the methods of medical colleges know that in other states as well as Ohio, in all but a few endowed institutions at the present time the rules for the admission of students, if regarded at all, are observed in the letter rather than in the spirit; and further, we know that the reason for this failure to maintain a high standard of entrance qualifications is the desire for large classes and the accompanying direct or indirect advantages which the faculties of these colleges may derive therefrom.

Stated plainly, the colleges, which have been charged by the state with the duty of maintaining the barrier between the incompetent practitioner and the public, have for their own profit violated their trust, and it is no palliation of this offense to say that one college dare not maintain the standard because its students will go elsewhere if it does so. We are not so feeble a body of men that we could not organize if we would and insist upon a high standard for ourselves, and see to it that other schools do the same.

The American Association of Medical Colleges, one of whose functions it is to maintain this standard, has had little trouble in increasing the number of years of study from two to three, and from three to four, but the rules they have established for the regulation of admissions are as full of loop-holes as a fish-net, and, such as they are, are violated with impunity, while the Association is powerless to compel the colleges to obey its mandates; powerless for reasons which should bring the blush of shame to the face of some of its officers.

Many of those present are familiar with the disgraceful occurrence of a few years ago, when it was proposed to bring certain schools to trial before the bar of that Association for failure to enforce the entrance requirements. A mass of evidence was found incriminating so large a number

of the leading schools that the investigating machinery lapsed into a state of "innocuous desuetude." There has undoubtedly been marked improvement of late in the qualifications of medical students, but I have serious doubts whether the officers and faculties of our leading medical colleges would be willing to have all of the alleged credentials of the students whom they have admitted even during the last few years subjected to the keen scrutiny of a critical and unsympathetic public.

It has been said in answer to these charges that the medical colleges of the state are operated under charters or as incorporated institutions, and no one has a right to dictate to them or prescribe when or how they shall teach. But the courts, in passing upon the constitutionality of the law creating our Board of Medical Registration and Examination, have set this question at rest. The people of Ohio have a right to insist, and, when the facts are brought to their attention, they will insist, that those in whom they have reposed the trust of determining who are competent to practice medicine shall perform the duties of that trust in good faith and without reference to the interests of the institutions with which they may be identified.

The Columbus Academy of medicine a few months ago adopted the following resolution:

Resolved, That it is the judgment of this Academy that the examination for admission to a course of study in a medical college, *if* such course is to lead to the degree of Doctor of Medicine, should be conducted by disinterested men not in any way connected with the medical schools, and who should be appointed by the State Board of Medical Registration and Examination.

And they also directed their Board of Censors to endeavor to obtain the co-operation of the medical colleges throughout the State in an effort to secure the adoption by the legislature of such an amendment to the present laws as will empower the State Board of Medical Registration and Examination to appoint a board, or separate boards compose

of teachers in high schools or colleges, who shall pass upon the credentials of all applicants or conduct an examination and determine whether or not the applicant is deserving of a certificate which, if granted, will allow any recognized medical college to admit him as a candidate for graduation and the receipt of a certificate entitling him to practice medicine in Ohio.

To the letters sent out at that time, and others which have subsequently been sent to the officers of medical colleges and societies, and to representative members of the profession in various parts of the state, some twenty-five answers have already been received, and, as indicating the attitude of the profession in the various parts of the state toward the question of reform in medical education, these answers are somewhat significant.

While three of the larger medical colleges of the state endorsed the action of the Academy and approved of the above resolution, and one opposed it, the other schools made no response.

Of the medical societies a number have approved and only two have reported as against the resolution.

Of twenty-five representative members of the profession located in various parts of the state, sixteen approved and nine disapproved.

Of the nine who opposed the plan suggested by the Columbus Academy of Medicine, all, with possibly one exception, are connected with medical colleges. The significance of this fact is, I think, apparent to all.

The character of the gentlemen opposing the measure and our high estimate of their opinions make us pause when we would otherwise be tempted to make uncharitable comments upon finding them in opposition to what seems to us so necessary a reform and ranged on the side of the maintenance of a lax system which, while degrading to the profession, has undoubtedly served to increase the number of

students in medical schools, and thus directly and indirectly benefit the teachers in those institutions.

Years of experience have demonstrated that we have nothing to hope from united action of the colleges so long as they are bidding against one another for numbers. But, by the proposed plan, as a certificate from the state examiners would entitle the student to admission to any college in the state, the reduction in the total number of students would bear equally upon all.

Some have seemed to misunderstand the proposed plan and to suppose that, were it adopted, the state board would assume to dictate who shall and who shall not be allowed to undertake the study of medicine. No attempt at such restriction is proposed, but merely that which is required in all well-regulated literary and scientific schools, namely, that work performed in the school, if it is to be counted as part of a course leading to a degree, must follow a certain logical order, and the first step in that order is such preliminary training that the student may be qualified to profit by, and derive the full benefit from, his subsequent studies. In the four years' graded course which is now required such preliminary training is absolutely essential.

This is the rule, as a matter of course, in other colleges, but, unfortunately, in the growth of medical schools it has been customary in the past to accept all who apply, and now competition tends to perpetuate the custom. As in many states a high-school diploma admits to the State University, it is now proposed that the certificate of a board appointed by the State Board of Medical Registration and Examination shall admit the possessor to any medical college in the state.

The fact that many of our best medical men have forced their way to the front rank of the profession in spite of serious defects in their early training has been cited in several of the letters received as an argument against a sys-

tem which would exclude native worth in favor of school training.

Native worth would not be excluded. A college course would not be necessary, and if the native worth were the genuine article, it would, by the expenditure of a little more energy before entering a medical college, prepare itself for still greater achievements than would be possible to it when handicapped by lack of a proper foundation.

The ground of opposition which seems to influence many of those who express themselves as opposed to the resolution is the fear that students, instead of passing our entrance examinations, will obtain their degrees from inferior schools in adjoining states and return to practice in Ohio. To this objection it may be answered that the State Board of Medical Registration and Examination has declared that it will reject every applicant who cannot show evidence of preliminary education equivalent to that required by Ohio, and it undoubtedly has the right to do so.

Our medical colleges have had much to contend with in the low standard which has prevailed in the schools in Louisville and Indianapolis, and it is but just that they should be accorded full protection against such competition by our statutes; but, in the name of humanity, why should the common-wealth of this great state be deterred from putting into operation a reform of such vital importance as the one proposed because our colleges deem it necessary to maintain a low standard of entrance qualifications in order to compete with a group of diploma-mills in neighboring states? And why should the supposed interests of the faculties of our medical colleges be allowed to prevail for one moment against the greater interests of the profession at large and the public, who, after all, have some rights which we are bound to respect? Why should we, who constitute the faculties of the thirteen medical colleges in Ohio, a small body of men embracing only about 6 per cent. of the physicians of the state, be allowed each year to

flood the country with hundreds of graduates, as we did last year, many of whom we take in without proper regard to their qualifications, simply because it is profitable for us to do so? Is the public benefited? Are you, as members of the medical profession, benefited?

Some say wait. Give the new law time to show what it can do. Allow these reforms to be worked out gradually. But why should we wait? Why should the fact that a board has been in existence for one year and has registered those physicians who are entitled to practice medicine in the state deter us from granting to that board full power to do all that may be required to make the future physician of Ohio the peer of the best? Twenty-two states to the east and west of us now have examining boards, and why should we lag behind?

Some one has said that the next best thing to a life of virtue is to sin in good company, but we have sinned so long that we no longer even have that comforting thought wherewith to console ourselves. We are sinning in very bad company. We are classing ourselves with the states in which low-grade schools and diploma-mills thrive. And under our present law we are even bound to accept the graduates of Eastern schools who are rejected by their own state boards.

No, gentlemen, the world has moved on in the last few years, and medical education should move with it. We should insist upon having the best prepared men, and then give them the best instruction we are capable of, and they will be none too good to practice our noble profession.

The idea that medical colleges are syndicates which, for their own profit, can control the output of doctors both as to quantity and quality, and must have license to admit whom they will without regard to state control, is preposterous.

The truth is, the medical colleges of this country have for years been committing a great crime against the profes-

sion, the state and humanity, and it is time Ohio should join the ranks of those states which have undertaken to make the future medical man all that careful preliminary training and a thorough medical course can produce.

The Ohio State Medical Society is the representative body of the profession of the state, and it is its sacred duty, by all means in its power, to elevate the character, conserve the interests and guard the honor of the profession it represents. Among the members of this society are a large number of men who are connected with medical colleges, and of this number some have been led to believe that the present system of independent action on the part of the colleges, with all of its defects, which most of these gentlemen are free to confess, should be left undisturbed.

We have a high appreciation of the earnest effort that is being made to improve the standing of our medical schools and the character of the work they are doing, and, if this opinion as to the independence of the schools is based upon regard for the good of the public or the profession at large, it is deserving of our respectful consideration; but, in so far as it is actuated by zeal for the immediate interests of the medical schools and the advantages they may derive from large classes, without regard to qualifications, it should be beneath the consideration of this society.

The medical college may be, but the general public, the profession at large and the members of this society are not, benefited by the fact that many hundreds of graduates are annually sent forth from these schools; half the number would be sufficient.

DISCUSSION.

DR. W. E. WIRT, Cleveland: I heartily endorse much that is said in this paper. This question came up in our own faculty and I feel the spirit of the paper is correct. But I feel, as several in our faculty felt, that there is one feature of this resolution put forth by the Columbus Academy of Medicine that cannot possibly pass in this state at the pres-

ent time. I favored it in our college and I think brought pressure to bear to help pass the resolution. The objectionable feature is that no mumber of a faculty shall be on this board. We all know that in the state of Ohio attempts at legislation have been made for some twenty years and still we get no result. At least, the proposed bills had not the sympathy of the medical colleges until that feature was dropped. To exclude a large number of the best men in the state from an opportunity to be on this board I think is ridiculous, or at least there is a sentiment against it, and I do not believe such a bill can be passed until we drop that feature of it. I do not think a member of a faculty will be persuaded from doing the right thing, if on this board, simply because the member happens to be from a particular school. I think it will have no influence whatever upon him. I, for one, am opposed to that feature of the resolution.

DR. J. C. CULBERTSON, Cincinnati: I think it would be a great mistake to come before the legislature with any amendment to our law, which has been so recently enacted. The law, itself, in the main is a most excellent one. Its enforcement from year to year will be more and more stringent. The people will become educated up to the necessities of it, and by and by the weak points and the necessary points for amendment will manifest themselves much plainer than they have up to this date, and for that reason I think it would be a weakness on our part to so soon come into the legislature and ask that the law be amended. I would have the law enforced as stringently as possible from year to year for at least two or three years, and then if necessary come before the legislature. I am in favor of anything that will advance the cause of higher education, as much as any man can be, but let us do it on practical lines. Let us go a little slow and not get our apple-cart upset.

DR. WM. C. CHAPMAN, Toledo: I arise to endorse Dr. Culbertson's remarks. This law, which we have worked so hard for for twenty years, is just begining to be enforced. We know it is not all we want. When it went through our society and went before the legislature, we knew it was not all we wanted. I believe the time will come when the medical colleges will not have anything to do with admitting men to the practice of medicine. This is done in some states and I believe it will come in our state. In Toledo the

present law is working remarkably well. A number of men have departed. I do not know whether they have died or what, but the law is working well. Men who have been advertising in the paper, and X-ray men, etc., have now gone. But let us go slow and not have the whole thing undone.

DR. J. A. KUMMELE Findlay, O. I am sorry I was not in to hear the paper, but I have had a little experience with the law that has just gone through, which has recently been sustained by the Courts. We have a lot of enemies yet to the bill, who have been only temporarily quieted, and if we go into the Legislature after it has been just passed almost unanimously, only one vote in the house against it and none in the Senate, these people will appear. I would endorse the sentiment I have heard expressed here, of a further advance, but I believe we had better just stick a peg where we are now and stay there for a while. The opposition was monstrous and it took a great deal of work to get it through. The profession stood shoulder to shoulder and if it had not been for that we could not have gotten the Bill through the Legislature. We had better leave it where it is, I believe, until it becomes a fixed custom with the people. If we try to get an amendment to it, it will probably be rendered useless. When it was passed, the enemies tried in every way to stick in one or two words here or there so as to render it useless. So I think for the present we had better leave the Bill as it is.

It was moved, seconded and carried, that these resolutions be referred to the Committee on Legislation.

DR. BARNHILL: I think our State Board of Registration and Examination would be greatly encouraged in the work they are doing if they might have an expression of approval from this society. This body represents the profession in the state not the colleges but the profession at large. The State Board has taken a forward step in what it has already done. It has accomplished great good if we do not care to go so far as to endorse the excellent recommendations of the paper just read we certainly owe it to ourselves and to the State Board of Medical Registration, and Examination to give a vote of approval for the efficient manner in which the provisions of the law regulating the practice of medicine have been carried out, and for the

efforts which the Board is making to establish a uniform standard of minimum requirements for entrance to the medical schools of the State. It would be an encouragement to the State Board to have the endorsement of this Society, and it is but proper that we should give some expression of approval or disapproval of its action, and I would move, if it be in order at this time Mr. President, that it be read.

(Resolution read.)

DR. Geo. A. COLLAMORE: I think the resolution is not in order at the present time. It is not pertinent to anything we are doing. In the second place, I would move that in view of the fact the consideration of these resolutions would bring on a debate, the end of which no man can see. (Read.)

Dr. R. Harvey Reed raised the point of order that the gentleman made a point of order and offered a resolution at the same time.

It was moved and seconded that the motion lie on the table.

CHAPTER XII.

IMPETIGO CONTAGIOSA

BY

G. A. COLLAMORE, M. D.

This disease is described by Tilbury Fox (London, 1873,) as follows:

It occurs among all classes of people; is quasi epidemic; is ushered in, occasionally by smart, generally by slight, fever; the eruption appears first of all on the face, sometimes on the hands, or top or back of head; in the form of little vesicles, enlarging into bullae; then extends to other parts; the vesicles are always isolated; in five or six days may reach the size of a sixpence or shilling; are then flat and depressed in the centre, their contents becoming turbid; usually vesico-pustule is the size of a split pea or thereabouts, containing a lymph-like fluid, granular cells, and subsequently pus cells. Scabs form, flat, straw-colored, dry and granular-looking and appear as if "stuck on" to the part; when they fall, an erythematous base is left behind. There may be successive crops of vesicles. On the face the spots may be confluent. There is no offensive smell.

Many children in a house may be attacked at one and the same time, or consecutively. The disease may be reproduced in other persons by inoculation.

Wm. Henry Fox, (New York, 1890), under the term "Porrigo" describes the pustules as the size of a dime crusts thick, friable, straw-color to greenish yellow or brownish; often central depression like vaccine crust. "In many cases the lesions had to run a definite course of from one to three weeks."

This description is accompanied by three photographic plates, colored by hand. Veiel in Ziemssen's Handbook, (New York, 1885,) says: "It would, perhaps, be better to exclude this term (impetigo) from the list of cutaneous diseases, but it is still used to designate two complaints—impetigo contagiosa (Tilbury Fox), and impetigo her petiformis, (Hebra)"

"It appears * * under the form of vesicles, from the size of a pin's head to that of a lentil, whose bases are not usually inflamed and which very soon dry into gummy crusts appearing as if glued on." "Usually disappears spontaneously in from two to six weeks."

Shoemaker, of Philadelphia, (New York, 1892), describes it as "an acute, inflammatory, contagious affection, characterized by the development of isolated, flat or elevated vesicles, blebs, or vesico-pustules, the size of a split pea, or larger, which dry into slightly adherent crusts." "Is generally ushered in with mild febrile symptoms," etc: "may be confounded with impetigo, eczema pustulosum, and varicella."

Such being the usual symptoms accepted by the best authorities, it remains to proceed to a consideration of cases. These all occurred in the practice of my friend, Dr. J. L. Tracy and were seen by me many times in consultation and otherwise.

Case 1. March 6, was called to see Miss S. a young lady just returned from a pleasure trip to Mexico. She had left Toledo Feb. 1, began to itch Feb. 8, itching continued to Feb. 27. At 11 A. M. on that day she became nauseated; then followed general aching of body, vomiting and fever until the next morning, when eruption began to appear upon forehead and back of hands. First appearing as papules, which disappeared under pressure; they gradually became vesicular and finally pustular in appearance. These pustules were about the size of a small pea, semiglobular, elevated about one half their diameter. There

had been and was at the time moderate pyrexia. Some were slightly umbilicated. Without expressing a positive opinion, my diagnosis rather favored varicella. On referring to Shoemaker's description of impetigo, however, the case seemed to harmonize with that group of symptoms, and the next day, seeing the patient the second time, I found that Dr. Tracy had reached the same conclusion. Numerous new pustules then appeared on the face, so that the eruption was almost confluent. In the course of two weeks this dried up into thin brownish scales which soon separated, leaving the skin with a reddish discoloration, which gradually faded to normal. There were also remaining, especially on the forehead numerous shallow, crater-like pits, not smooth, but with slight elevations radiating from the center. This patient's convalescence was delayed by several phlegmons, one on the leg being slowly developed and attended with much pain. New crops continued to appear for nearly three weeks, but appeared to maturate more quickly.

Cases 2 and 3. These were the sister of the previous case and her husband, who in about two weeks after the advent of case No. 1, were seized with severe fever, attended with much muscular pain, especially in the back, the fever continuing about three days and being followed by an eruption of a few pustules as in the previous case, which rapidly desiccated and disappeared.

Case 4. This was the son of the two previous cases, about six years old. He had high fever for three days, then the eruption which covered him sparsely, the pustules drying up and falling in about a week, leaving no pits. It was characteristic of this case, as in Case No. 1, that the pyrexia rapidly subsided with the appearance of the eruption, and did not return with the maturation of the pustules.

Case 5. This was the servant girl of the house, aged about twenty. She had been in the family since the first case, and was now taken with severe fever, followed in three

days by the same eruption. This covered her face quite fully, and was markedly abundant on the backs of the hands and quite general over the whole body. In this case the pustules, or rather vesicles, were more flattened, of rather larger size and more of them slightly umbilicated. On the third day of the disease, at her request, she was removed to her home in Riga, Mich., where she was promptly quarantined by the local physician as a case of smallpox. It is true, he made his diagnosis from the outside of the house through a window, ten feet more or less from the patient. Subsequently, the brothers and sisters of the patient, seven in number, contracted the disease, from which they are all now convalescent. These cases were observed by several physicians from Blissfield, and investigated by Dr. Cattermole, of Lansing, at the request of the Secretary of the State Board of Health, in relation to which the following letter from Dr. Baker is of interest:

LANSING, May 7, 1897.

G. A. COLLAMORE, M. D., Toledo, O.

DEAR DOCTOR: Replying to your letter of May 5, the exact nature of the sickness at Riga has not yet been determined. For *restrictive* purposes it is considered smallpox, but it is spoken of in our bulletin as "suspected small-pox."

If, at any time, you have any positive information regarding this outbreak of suspected small-pox (it is a peculiar sickness) I should be glad to know its exact nature.

Very respectfully,

HENRY B. BAKER,
Secretary.

From the fact that this group of cases all occurred in the same family, and the disease was apparently propagated from one to another, it became advisable to revise our original diagnosis, by adding the word "contagiosa."

This family were Americans, except the servant girl, who was of German descent, in good circumstances, and resid-

ing in a healthy part of the city. The house was informally quarantined—not by the Health Department—and, so far as known, no other cases occurred outside.

Case 6. This is the first case in group two, a Polish family, residing in a part of the city which has few sanitary advantages, and possessed but few of the luxuries of life. The mother, aged 36, was taken with the same symptoms, initial fever, abundant eruption, especially on face and hands, drying up in a week or ten days into thinnish scales which fell off easily.

Cases 7, 8 and 9. These were the three children of the family, a boy, aged five, a girl, aged three, and a nursing infant, about nine months. About thirteen days from the appearance of the disease in the mother, they were all taken with the fever followed by the eruption of vesicles, speedily becoming pustular, or sero-pustular and rapidly desiccating. The eruption in the children was much more sparse than in the mother and the disease—aside from the initial fever, much milder. The mother was seen by Dr. J. T. Woods, health officer, and other physicians. In the opinion of Dr. Woods, Dr. Tracy and myself, the appearance of the eruptions corresponded exactly with the plates in Wm. Henry Fox's work. (Plates shown.)

Case 10. This was a young woman, employed as a nurse in the family. She had moderate fever, followed by a few illy-defined vesicles or pustules.

These five cases comprise group No. two. The cases were precisely similar to those in the first group, so far as we could judge. The two groups occurred at the same time, though two miles apart, and, so far as I can ascertain, were the only cases in the city.

Case 11. This was a young woman, sister to the husband of case 6, who had done washing at her brother's house during his wife's illness. About two weeks thereafter she was seized with fever, lumbar pains, etc., and the eruption as in the other cases. She was first attended by Dr. Sharpe,

but Dr. Tracy was afterwards called, with whom I saw her. The vesicles covered the face and hands—the backs almost completely, though not distinctly confluent. They were flattened, slightly umbilicated, and contained, in the stage I saw them, a clear serum.

The health officer was notified to examine the case, and he considered it so nearly to resemble small-pox that he formally quarantined the house, and put the case in charge of the small-pox physician.

Case No. 12. A brother to case No. 11, said to have the same disease. I did not see him.

The above is surely a very interesting series of cases and one which has given us occasion for very serious consideration. The main question is, evidently, that of diagnosis, as prognosis has been favorable in each case. Shoemaker is the only authority I have met who makes any reference to any similarity to small-pox. He says it (impetigo contagiosa) is to be differentiated from varicella. Now varicella was by the older writers, as by Tilbury Fox in 1873, and even to-day by the Vienna school, as I have lately seen it stated, considered as a form of variola, and might, under favorable conditions, develop into that malady. We know how difficult it is at times to diagnosticate between varicella and variola, and if impetigo may resemble varicella, *pro tanto* it may simulate variola. The vital question is, "Is impetigo contagiosa an allotropic form of smallpox?" There are arguments for and against. In favor of the variola theory are the back and loin pains and the eruption on the third or fourth day, going through the phases of papule, vesicle and pustule. Umbilication is common to both, as is the preliminary fever. The abundance of the eruption, almost if not quite, reaching confluence, especially in the pustular stage, is very suggestive of small-pox and would justify any health officer in prescribing quarantine, provisional, at least.

On the other hand, the whole course of the disease, especially after the eruption begins to show itself, impresses one with the idea that it is a much less grave disease than smallpox. Whereas, in smallpox the eruption fever increases to full maturation of the pustules, evidently indicating a septic condition, in this disease, except itching and other minor unpleasant trifles, with the appearance of the eruption the malady seems to be spent, no, or slight pyrexia appearing, and the patient feels fairly comfortable. In no case was there the slightest fear as to the result. It was noticeable that the mildest cases occurred in the young children all of whom were unvaccinated, while the severest cases were all in adults, some of whom were vaccinated.

While convalescing the three children in group No. 2 were vaccinated but in neither was it successful.

In no case was there any characteristic smallpox odor.

Whether any of the cases were smallpox or not we felt that we had at least *one* case of impetigo contagiosa—case No. 6—as it corresponded in all respects with the description and plates in Wm. Henry Fox's work.

As to previous vaccination, the following table gives the statistics:

Case No. 1, vaccinated 16 years, disease severe.
Case No. 2, vaccinated 20 years, disease mild.
Case No. 3, vaccinated 20 years, disease mild.
Case No. 4, not vaccinated, disease mild.
Case No. 5, not vaccinated, disease severe.
Case No. 6, not vaccinated, disease severe.
Case No. 7, not vaccinated, disease mild.
Case No. 8, not vaccinated, disease mild.
Case No. 9, not vaccinated, disease mild.
Case No. 10, vaccinated 6 years, disease mild.
Csse No. 11, not vaccinated, disease severe.

We were fortunate to have at the same time two cases of genuine smallpox at the pest house, with which we carefully compared the cases narrated above.

CHAPTER XIII.

In Memoriam.

A. E. BELL, M. D.

Permanent Member, Zanesville.

At a special meeting of the Muskingum County Medical Society the following resolution was passed:

WHEREAS, In the death of our esteemed friend and fellow-practitioner, Dr. A. E. Bell, the profession and especially the Muskingum County Medical Society has lost one of its influential and honored members,

Resolved, That we express to the wife of the deceased our sincere and heartfelt sympathies in this, her hour of trial and affliction.

Resolved, That a copy of these resolutions be presented to the family of the deceased; that they be published in the columns of our daily papers and also in the columns of the Cincinnati *Lancet Clinic*.

Signed { J. M. FASSIG, W. A. MELICK, G. WARBURTON.

The following eulogy by Dr. J. S. Haldeman was listened to with interest by the members of the society:

IN MEMORIAM OF A. E. BELL, M. D.

"It is common to bestow eulogies upon the dead, and rightfully so upon the worthy ones. And doing so I am forcibly reminded of these poetic words:

'Why do we wait till ears are deaf,
Before we speak our kindly words;
And only utter loving praise
When not a whisper can be heard?

'Why do we wait till hands are laid
Close-folded, pulseless, ere we place
Within them roses sweet and rare,
And lilies in their flawless grace?'

"In Dr. Bell we found most assuredly such a personage as the foregoing lines indicate, whose virtues we could commend when living and moving among us, as well as we now can, that his body is lying cold and helpless in death's and the grave's embrace, and his immortal spirit is grandly basking in the sunshine of celestial bliss and enjoyments of paradisical fruitions.

"My first knowledge of Dr. Bell extends back many years ago, as far back, at any rate, as 1851—some forty-six years ago. I distinctly remember the location of his office. It was a small brick building on the northwest corner of North Fifth Street and Fountain Alley. His beginning of the practice of medicine in the city was contemporaneous with Drs. Ball, Culbertson, Holston, Sr., and myself. Dr. McElroy had come to this city a year or two prior; Dr. Hildreth some eighteen years before. He devoted most assiduously all the subsequent years of his practice intervening from that time until his death to the duties of his profession and was singularly successful in mitigating the sufferings of his patients and restoring them to their normal healthy condition. He certainly well deserved the envied soubriquet of 'beloved physician,' as was given to Luke, the evangelist.

"Dr. Bell was also among the first of the Zanesville physicians who adopted the theory of the germ system, as being reliable and truthful, and which is now pretty generally received. He never wavered in his advocacy of it.

"He was a member of every medical organization that was formed in the city and took an active part in their

transactions of business, and in the discussion of the various medical topics that from time to time were presented.

"I will close this sketch by making a quotation from a book entitled 'The Physicians and Surgeons of the United States,' edited by William B. Atkinson, M. D., published in 1878, by Chas. Robson, Philadelphia, Pa., in which a biographical account occurs of the doctor:

"'Aurelius Eaty Bell, Zanesville, O., son of Dr. Edward Southwood Bell (deceased), late of Zanesville, O., was born at Middleway, Jefferson County, Va., November 14, 1824. He pursued his medical studies at Jefferson College, graduating M. D. in the spring of 1849, and settling immediately after in Zanesville, in general practice. He is a member of the Ohio State Medical Society and of the Zanesville Academy of Medicine, was its President during 1875. His contributions to medical literature are confined to his local society. For some time during the war he held the office of Post-Surgeon to Camp Goddard, near Zanesville. On June 3, 1852, he married Sarah M., daughter of the late Robert McConnell, Esq., of McConnelsville, O.'

"His death took place January 15, 1897, and the funeral obsequies January 18, attended by the medical fraternity in a body, and a very large concourse of citizens."

W. R. BRICKER, M. D.

Life Member, Shelby.

W. R. Bricker, M. D., of Shelby, O., born in Shafferstown, Lebanon County, Pa., October, 6, 1820. Died September 6, 1896. When a boy his parents came to Ohio, settling in Richland County. A graduate of Willoughby, practiced for a few years in Mansfield, O., removed to Shelby, O., where he made his first professional call, September 5, 1845, and his last the same date and near the same locality, September 5, 1896. At the organization of the

Ohio State Medical Society he rode horseback to Columbus and continued a steadfast member until his death. The last meeting he attended in Columbus, 1895, being one of the four charter members then alive.

A. M. ELLSBERRY, M. D.

Permanent Member, Georgetown.

Dr. A. M. Ellsberry of Georgetown, Brown county, Ohio, died at his residence in this place July 18, 1896, after an illness of several months of paralysis of cerebral origin. Dr. Ellsberry was born at Bethel, Clermont county, Ohio, March 25, 1824, consequently being in his seventy-third year at the time of his death. Dr. Ellsberry after receiving a fair education, commenced the study of medicine at the age of eighteen with his brother, Dr. William Ellsberry, in his native town. He attended his first course of lectures at the Cleveland Medical College in 1846–47, and graduated from the Starling Medical College of Columbus, Ohio, in 1850. After graduation he located in Bethel, Ohio, and engaged in the practice of medicine with his brother where he remained until 1853, when he located in Georgetown, Ohio, and engaged actively in practice until a short time previous to his death. Dr. Ellsberry was a member of the Brown County Medical Society, also of the Ohio State Medical Society. The Doctor was a genial, honorable, upright gentleman and was held in high esteem by his brethern of the medical profession. As a citizen he was active and enthusiastic in everything that was of interest to the locality in which he resided. He was a reader of the better class of literature, and a thinker and reasoner of more than ordinary ability. It was a pleasure to converse with him on almost any topic. He was an honored member of the Masonic fraternity by which order he was buried. Dr. Ellsberry was married twice, his first wife died in 1854,

he was again married in 1859; his last wife, two sons and three daughters survive him. Dr. Ellsberry was one of the most highly respected citizens in the county. His death is a loss to the profession and to the community wherein he so long resided.

ORVILLE JOHNSON, M. D.

Permanent Member, Worthington.

Orville Johnson was born at Henderson, Jefferson county, New York, December 4, 1822. At what age he came to Ohio is not known to the writer, but in 1843 he was living in Maumee City (now South Toledo,) publishing the Maumee River *Times*. While living there he became acquainted with Mrs. Waite, wife of M. R. Waite, afterwards Chief Justice of the United States Supreme Court. This lady was, according to Dr. Johnson's judgment, expressed to me at the time of her death about a year ago, peculiarly adapted to influence young men; a power she exercised in bringing them to God and urging them to seek all things that ennoble. It was by her that the impulse was given that finally brought him into the Episcopal Church. It was too, probably owing to her influence that in 1844 he entered the Freshman class at Kenyon College, where he remained a student for a little more than two years. It was there, through the association with his professors and fellow-students, that he learned the value of study, mental training and discipline, that studious habits, self-control and plodding industry will accomplish greater and more permanent results than bright and great mental gifts without such habits and control. He had already learned the printer's trade and partially paid his college expenses by setting type upon the Gambier *Observer*. That trade is one that calls for concentrated attention and careful heed to minute details, two traits that marked Dr. Johnson's work in everything he undertook. From Gambier, he went in

1847 to Columbus, where he was employed as compositor on the Ohio State *Journal*, and in publishing the Lutheran *Standard*, he being at that time a member of the Lutheran Church. Meanwhile he was pursuing his studies at Starling Medical College, where he graduated in 1852. While in Columbus he was confirmed in Trinity Church by Bishop McIlvaine, thus entering the church which he served faithfully to his life's end. For a year he practiced medicine in Columbus, associated with Dr. B. F. Johnson. In 1853 he moved to Worthington and began the practice of medicine there. He was for a time in partnership with Dr. Andrus, the rest of the time alone, till within the past year when his son entered partnership with him. Since 1853 he has not only lived in Worthington, he has been part of it. Since 1858 he has been village clerk, an office he was peculiarly adapted to fill, as was evidenced by the long years his fellow citizens called on him to fill it. On the 17th of June, 1856, he was married to Ellen M. Armstrong. To them six children were born, all of whom are living. Mrs. Johnson's death, nearly three years ago, being the first break in the family.

He was one of five physicians who founded the Central Ohio Medical Association. For many years in that association the confidence of his brother physicians was evidenced by the number of times he was elected secretary, the working officer of such societies, the one upon whose ability, carefulness and faithfulness the success of the meetings largely depends. For one year he was president. He was also a member of the County and International Associations of Physicians, was interested in all their affairs and a thoughtful student of all their publications.

For years he was clerk of the Board of Education of the Worthington School district. For many years he was trustee of St. John's church and gave of his time and labor to the performance of the (many time) unpleasant work of that office. Since the death of Mr. Ezra Gilbert he has

been Senior Warden of the Parish. Upon the organization here of the Anti-Saloon League he was made treasurer and collector, was practically the only worker in that organization. He was a worker in and for every society he was interested in, a student and worker in his profession. In his deliberate, methodical way he was always working, and he only ceased working as the soul left the body.

RESOLUTIONS OF RESPECT ADOPTED BY THE VILLAGE COUNCIL, WORTHINGTON, OHIO, OCTOBER 7, 1896.

WHEREAS, in the dispensation of an All-wise Providence, whose ways sometimes seem mysterious to us, Dr. Orville Johnson, a venerable and esteemed man, has been suddenly called from our midst:

Resolved, Therefore, that in his death we have lost a most worthy and valuable member of our council, who (as clerk) for nearly forty years has so faithfully and accurately recorded the transactions at our meetings; his family a kind and affectionate father, and the community at large has lost, not only a skillful and successful physician, but a man in every sense of the word, and one who has greatly endeared himself to the people on account of his acts of charity and his principles of temperance and morality and his religion.

Resolved, That while we bow in humble submission to the will of our Heavenly Father, in this affliction, and though we shall greatly miss him at our meetings and be deprived of his wise council and friendly greetings, yet we believe that our loss will be his gain.

Resolved, That while we deeply and sincerely sympathize with his bereaved family we can offer but little consolation of this world, but we believe that He who looks down with tender compassion upon the afflicted and sorrowful will extend the arms of His love and protection to those who put their trust in Him.

W. P. VEST,
DR. WM. HUNT, } Committee.

RESOLUTION OF RESPECT ADOPTED BY THE BOARD OF EDUCATION, WORTHINGTON, OHIO.

WHEREAS, God in His providence, has removed from our body its efficient clerk, Dr. Orville Johnson, who has served us so faithfully and whose presence will be so sadly missed; therefore,

Be it resolved, That we, the members of the Board of Education, thus express our appreciation of his long and faithful services rendered for the best and most lasting interests of our public schools; and be it further

Resolved, That these resolutions be spread upon the minutes of the Board of Education and that a copy of the same be sent to the family of the deceased.

HIRAM R. KELLY, M. D.,

Permanent Member, Galion.

Dr. H. R. Kelly died after an illness of only six days. He was 62 years of age. Hiram R. Kelly, son of Aron and Sarah Rackafellow Kelly, was born February 7, 1835, in Shamokin township, Northumberland county, Pa. He received his early education in the common schools until reaching the age of 13, serving then as a clerk in a store for two years. At the expiration of that time he began teaching school and continued until 1853, when he removed to Ohio.

Upon arriving in this state he settled in Perry township, Morrow county, teaching school one year. In 1854 he became student of the Ohio Wesleyan University at Delaware, pursuing his studies until 1856, when he went to Cincinnati ,where he attended a full course of medical lectures, after which he came to West Point, Morrow county, and engaged in the practice of medicine until 1865, when he went to Columbus and attended another full course of lectures at Starling Medical College and graduated. Returning to West Point he remained and practiced medicine until 1870, when he came to Galion, where he was an hon-

ored and respected citizen until death, practicing his profession all these years.

The deceased was married in 1858, to Miss Matilda Emma Keech, of Chester county, Pa. The union was blessed with one son, Webb J., who is a practicing physician of this city, and with his mother survives to mourn at the bier of a loved husband and father.

In addition to attending to a large practice, Dr. Kelly has been foremost in many of the affairs of the commonwealth and has held a number of positions of honor and trust. He was a member of the Ohio State Medical Society, and in 1878 was appointed a trustee of the Girls' Industrial Home at Delaware. For 12 years he was a member of the board of education. He was connected with the medical and surgical departments of the Erie Railway for 27 years and was the oldest surgeon on the road. He was one of the prime movers in establishing beautiful Fairview cemetery and held the position of president of the cemetery association at the time of his death. He was the first past chancellor of Galion lodge Knights of Pythias and its representative to the grand lodge. With one exception he was the oldest Odd Fellow in this city and was a Mason 35 years. He maintained his membership in all these organizations. As physician he enjoyed a large practice and as a citizen he was most highly esteemed. His death is most deeply regretted.

JAMES D. ROBINSON, M. D.

Life Member, Wooster.

Dr. Robinson was one of the life members of the Ohio State Medical Society from 1856 to the date of his death. He was graduated from Jefferson Medical College in 1843, having studied in the Brooklyn Hospital and Medical College of Michigan. He practiced in Cincinnati for three years prior to receiving his degree.

On July 3, 1846, he enlisted in the 3d O. V. I., and went into service in the Mexican War. He was afterward assigned the 3d Illinois regiment and under orders from Gen. Zachary Taylor proceeded to Victoria. He was with his regiment at Vera Cruz at the time of surrender. Sickness compelled him to resign his commission and in 1847 he practiced in Wooster in partnership with Dr. J. P. Coulter. In 1853 he studied in New York city. At the breaking out of the war of the Rebellion he was assigned to the 16th Ohio Volunteer Infantry and at the battle of Phillipi he made the first leg amputation of the war. In July he was promoted to the rank of Brigade Surgeon and assigned to General Rosecran's command.

In 1862 he accompanied General Shields down the valley of the Shenandoah and participated in the first battle of Winchester, Virginia. He had general supervision of hospitals until General Banks was finally driven from the valley. Subsequently he was attached to the 6th army corps under General Franklin as inspecting surgeon, retaining this position until after the battle of Antietam, Sept. 1862. He was next ordered to Washington to take charge of the Patent Office Hospital but was compelled to resign on account of illness of his wife. Surgeon of the Board of Enrollment was his next official honor.

This partial record of the doctor's life shows him to have been a most zealous patriot and a surgeon of superior skill and executive ability. His long life of arduous labors in general practice complete a most honorable professional career. His nature combined eminent surgical qualifications with a cheery, hopeful disposition. Confidence in his skill imparted courage to himself and his patients and his habitually serene nature and inate good humor made pain more easy and labor a pleasure.

A. ROSENFELD, M. D.

Permanent Member, Cincinnati.

The following resolutions were adopted by the Academy of Medicine of Cincinnati at its meeting of January 18, 1897.

Dr. A. Rosenfeld, a respected member of the Academy, is dead. He uttered his mute farewell on January 8, 1897. A resident and a practitioner of medicine in this city since the year 1853, he has gone to the reward of a good physician. For the last few years, owing to failing health, he had retired from active practice. Few of his contemporaries and colleagues are left to tell of his good traits. He was the good family physician in the fullest meaning of the word. The profession has changed and people have changed in the belief that specialists are necessary, still the place of the general practitioner exists.

To know man in his physiological, as well as his pathological state, to be a man of high education, of abounding charity, of great patience, of a thorough knowledge of man intellectually, morally and physically, constitutes in its true sense the general practitioner, the adviser, the friend, and comforter of the sick. Dr. Rosenfeld was such a practitioner. He was modest, like all students. He was an honorable man, and a kindly disposed gentleman. He enjoyed in his active days a large practice, and the respect of all who knew him.

The Academy hereby expresses its sorrow and sympathy with his family.

Your committee respectfully requests that a copy of his memorial be sent to the family by the society.

JOHN A. MURPHY,
J. C. CULBERTSON,
W. D. HAINES,
Commtitee.

E. B. STEVENS, M. D.

Life Member, Lebanon, Ohio.

Edward Bruce Stevens, long an active member of the Ohio State Medical Society, died at his residence, Lebanon, O., July 11, 1896, in the seventy-third year of his age. His membership dated from 1853, and during his active life the transactions of the Society contained many contributions from his pen. From 1862 to 1867, inclusive, he served as Secretary of the Society and in 1868 as its President. He was probably best known as a medical teacher and journalist. As medical teacher he will be remembered by the students of Miami Medical College during the years from 1865 to 1873, and at Syracuse University during the period from 1872 to 1877. As a journalist he conducted the old *Lancet and Observer*, and afterwards the *Obstetric Gazette*. The following memorial was prepared by a committee of his local society.

Dr. E. Bruce Stevens, formerly Professor of Materia Medica in Miami Medical College and Syracuse University, and for some years editor and publisher of the *Lancet and Observer*, and afterwards of the *Obstetric Gazette*, died at his home in Lebanon, O., July 11, 1896.

Our friend and associate has bowed to the imperious necessity that confronts our humanity, and we, the Warren County Medical Society, of which he had long been an active member, desire to express in this public manner our regard for his eminent ability and our regret at his death.

Dr. Stevens was a writer, lecturer and practitioner of wide reputation, having added to his superior natural endowments high academic attainments that commanded respect wherever he was known.

Courteous in professional association, definite and reliable in professional opinion, we shall miss his earnest, friendly greeting and his clear and instructive councils.

To his bereaved wife and children we extend heartfelt sympathy in the hour of this great sorrow.

Committee, { OTHO EVANS, BENJ. H. BLAIR, HERSCHEL FISHER.

CHAPTER XIV.

ROLL OF PERMANENT MEMBERS.

OHIO STATE MEDICAL SOCIETY,

ALPHABETICALLY ARRANGED BY NAME.

CAPITALIZED: Life members.

Italicized: Deceased since last meeting.

Local Secretaries will please notify the Secretary of errors or omissions and forward obituary notices with their annual catalogue.

Abbott, C. N., Academy of Medicine.....Cincinnati, 1892
Ackley, George B., Meigs county Medical Society.....Pomeroy, 1892
Adams, P. N., Montgomery county Medical Society.....Dayton, 1885
Adair, Samuel G., Washington county Medical Society..Beverly, 1893
Albl, Michael A., Cuyahoga county Medical Society..Cleveland, 1892
Alcorn, E. G., Gallia county Medical Society.....Gallipolis, 1895
Alcorn, John B., Gallia county Medical Society.....Gallipolis, 1894
Aldrich, Daniel B., Astabula county Medical Society.....Harbor, 1892
Aldrich, Chas. J., Cuyahoga county Medical Society...Cleveland, 1891
Allard, Lorenzo D., Pike county Medical Society.....Portsmouth, 1894
Allen, C. O..... Haydenville, 1895
Allen, Dudley P., Cuyahoga county Medical Society...Cleveland, 1885
Allen, George M., Academy of Medicine ....Cincinnati, 1892
Allen, S. E., Academy of Medicine..... Cincinnati, 1892
Andre, Orrin C., Hempstead Mem. Academy of Med ...Waverly, 1888
Archer, J. R.....N. Baltimore, 1892
Armentrout, Lyman W..... Mt. Vernon, 1892
Armstrong, C. L., Academy of Medicine.....Cincinnati, 1892
Axline, Chas. Z., Hildreth District Medical Society..Fultonham, 1884
Ayres, S. C., Academy of Medicine.....Cincinnati, 1877
Backus, L. C., Tri-state Medical Society.....Fayette, 18[illegible]

Bain, Frank D., Northwestern Ohio Medical Ass'n.....Kenton, 1885
Baker, A. R., Cuyahoga county Medical Society.....Cleveland, 1886
Baker, J. P., Hancock county Medical Society.....Findlay, 1891
Baker, William O., Northeastern Ohio Med. Ass'n..Louisville, O., 1882
Baldwin, J. F., Academy of Medicine.....Columbus, 1875
Ballinger, J. B.....Webster, 1880
Bange, Theo.. Academy of Medicine.....Cincinnati, 1892
Barnes, J. W., Ross county Medical Society.....Columbus, 1892
Barnes, T. S., Ross county Medical Society.....Chillicothe, 1890
Barnhill, James U., Academy of Medicine.....Columbus, 1884
Barrere, D. M., Montgomery county Medical Society.....Dayton, 1884
Bates, F. L., Allen county Medical Society.....Lima, 1890
Battles, Mary M., Ashtabula, Lake & Geauga Co. M. S..Ashtabula, 1897
Bauer, M. M., Northeastern Ohio Medical Ass'n.....Lake, 1884
BEACH, J. N., Central Ohio M. S., Madison Co.....Jefferson, 1854
Beardsley, C. E., Northwestern Ohio Med. Ass'n.....Ottawa, 1869
Becker, Bernard, Toledo Medical Association..... Toledo, 1892
Beck, John S., Montgomery county Medical Society.....Dayton, 1879
Beckwith, Seth W., Toledo Medical Association.....Toledo, 1892
Beers, A. M., Tuscarawas county Med. Society..Newcomerstown, 1882
Bell, A. E., Muskingum county Medical Society.....Zanesville, 1892
Belt, R. C., Miami Valley Medical Society.. .....Milford, 1892
Belt, John H., Cleveland Medical Society.....Cleveland, 1897
Benner, C. T., Northwestern Ohio Med. Ass'n.....Tiffin, 1891
Bennett, W. C., Morrow county.....Iberia, 1892
Bennett, C. A., Clermont county Mecical Society..Withamsville, 1892
Bertolette, Harry B., Wayne county Medical Society.....Shreve, 1896
Bessey, J. Mortimer, Toledo Medical Ass'n.....Toledo, 1887
Bethauser, C. M., Academy of Medicine..... .....Columbus, 1895
Bevington, H. S., Crawford county Med. Soc....Sulphur Springs, 1892
Bigham, J. G.. Holmes county..... ....Millersburg, 1887
Bivans, W. A., Brown county Medical Society.....New Hope, 1892
Bird, Edw. H., Northwestern Ohio Med. Ass'n..... Dupont, 1892
Blackburn, M. E., Academy of Medicine.....Columbus, 1895
Blair, B. H., Warren county Medical Society.....Lebanon, 1892
Blake, F. W., Academy of Medicine.....Columbus, 1892
Blake, Wm. H., Central Ohio Medical Society.....Shadeville, 1878
Bland, J., Crawford county Medical Society.....Bucyrus, 1892
Blankenhorn, H., Union Med. Ass'n N. E. O.....Orrville, 1895
Blazer, H. E., Eastern Ohio Medical Ass'n.....Salineville, 1897
Bleile, A. M., Academy of Medicine.....Columbus, 1882
Blickensderfer, Jos., Tuscarawas Co. M. S.....New Philadelphia, 1897
Bodman, Lewis H., Toledo Medical Ass'n ....Toledo, 1892

Boerstler, George W .....Lancaster, 1870
Bond, John W., Toledo Medical Ass'n.....Toledo, 1892
Boggess, E. M., Fayette county Med. Soc.....Washington C. H., 1892
Bohl, John, Sr., Washington county Medical Soc.....Watertown, 1892
Bonifield, C. L., Academy of Medicine..... Cincinnati, 1892
Bonner, C. A., Montgomery county Medical Society.....Dayton, 1892
Bonner, Horace, Montgomery county Medical Society..Dayton, 1879
Boone, D. W., Belmont county Medical Society.....Bellaire, 1890
Boone, Jos. S., Belmont county Medical Soc.....Powhattan Point, 1892
Bowen, A H., Academy of Medicine.....Columbus, 1878
Boylan, A., Union county..... .....Milford Centre, 1878
Boyd, James P., Northeastern Ohio Medical Ass'n.....Akron, 1892
Bradford, W. N.....Cambridge, 1896
Brady, M. B., Academy of Medicine.....Cincinnati, 1892
Brand, Walter W., Toledo Medical Ass'n.....Toledo, 1896
Branna, T. H., Tuscarawas county Medical Soc.....Canal Dover, 1884
Brashear, B. B., Cuyahoga county Medical Society.....Cleveland, 1896
Brayton, Asa, Northwestern Ohio Med. Ass'n.....Carey, 1892
Brent, C. P., Academy of Medicine .....Cincinnati, 1892
Bricker, W. R......Shelby, 1848
Brigham, O. S., Toledo Medical Ass'n.....Toledo, 1892
BRINKERHOFF, D. H., Sandusky county Med. Soc...Fremont, 1853
Brocket, A. J..... .....Cleveland, 1874
Brown, E. O. S., Pike county Medical Society.....Beaver, 1895
Brown, H. M., Academy of Medicine .....Cincinnati, 1882
Brown, J. A..... .....Germantown, 1886
Brown, J. E., Academy of Medicine.....Columbus, 1892
Brown, R. A.....Circleville, 1896
Bruehl, Gust., Academy of Medicine.....Cincinnati, 1892
Brundage, L. A., Greene county Medical Society.....Xenia, 1892
Bruner, Wm. E., Cleveland Medical Society.....Cleveland, 1897
Brush, Edmund C., Hildreth District Medical Soc.....Zanesville, 1878
Buckingham, John M., Clarke county Medical Soc...Springfield, 1885
BUCKNER, J. H., Academy of Medicine.....Cincinnati, 1863
Buechner, W. L., Mahoning county Medical Soc...Youngstown, 1879
Bunn, Jas. W., Adams county Medical Society.....West Union, 1872
Bunts, Frank E., Cuyahoga county Medical Society...Cleveland, 1892
Burrows, S. S., Ashtabula county Medical Society.....Columbus, 1895
Butler, Geo. O..... ..Cleveland, 1870
Butler, Geo. W..... .....Columbus, 1869
Buttemiller, J. C., Academy of Medicine.....Cincinnati, 1897
Caldwell, John L., Pike county Medical Society.....Waverly, 1894

Caldwell, J. S., Academy of Medicine.....Cincinnati, 1892
Caldwell, William, Sandusky county Medical Society..Fremont, 1886
Calhoun, W. M., Union M. A. Columbus.....East Liverpool, 1892
Callinan, D. F.....Corning, 1892
Calvin, J. H., Erie county Medical Society.....Salem, 1891
Campbell, Oscar B., Cuyahoga county Medical Soc.....Cleveland, 1892
Carmichael, W. A., Miami Valley Medical Society.....Loveland, 1871
Carpenter, E. G., Cuyahoga county Medical Society...Cleveland, 1892
Carpenter, Julia W., Academy of Medicine.....Cincinnati, 1879
Carrick, Anthony L., Academy of Medicine.....Cincinnati, 1871
Carrol, Thos. E., Clarke county Medical Society.....Springfield, 1892
Carson, Archibald I., Academy of Medicine.....Cincinnati, 1892
Carson, Frank D , Holmes county Medical Society... .....Benton, 1892
Case, Freeman D., Ashtabula county Medical Society..Ashtabula, 1886
Chadwick, Leroy S., Cuyahoga county Medical Soc...Cleveland, 1892
Chamberlin, Chas. S., Trumbull county Medical Soc...Kinsman, 1892
Chapman, Byron, Northeastern Ohio Med. Ass'n.....Copley, 1885
Chapman, Wm. C., Toledo Medical Association .....Toledo, 1875
Chesney, John A., Crawford county Medical Society.....Bucyrus, 1892
Chidester, C. W .....Delaware, 1895
Chisholm, H., Marion county Medical Society.....Marion, 1895
Church, Walter F., Sandusky county Med. Soc.....Gibsonburg, 1897
Clapp, Harold T., Cuyahoga county Medical Society..Cleveland, 1891
Clark, C. F., Academy of Medicine.....Columbus, 1885
Clarke, Ida, Mahoning county Medical Society.....Youngstown, 1889
Clark, Frank S., Cuyahoga county Medical Society...Cleveland, 1892
Clark, John H., Champaign county Med. Soc.....Mechanicsburg, 1869
Clark, Myron S., Mahoning county Medical Society..Youngstown, 1879
Clay, W. P.....Elgin, 1896
Cleaver, J. V., Summit county Medical Society.....Akron, 1892
Clemson, G. W., Perry county Medical Society .....Thornville, 1896
Clouse, Geo. M., Academy of Medicine.....Columbus, 1892
Cole, A. P., Ross county Medical Society.....Chillicothe, 1895
Cole, Wm. U., Academy of Medicine.....Columbus, 1896
Coleman, N. R., Academy of Medicine.....Columbus, 1875
Coldham, Wm. W., Toledo Medical Association..... .....Toledo, 1892
Collamore, Geo. A., Toledo Medical Association.....Toledo, 1880
Collins, B. F., Eastern Ohio Medical Association.....Toronto, 1895
Collins, Edgar F..... Mt. Sterling, 1896
Colllns, Milton H., Clarke county Medical Soc....So. Charleston, 1890
Collins, John W..... .....Steubenville, 1894
Colville, George H., Belmont county.....Harrisville, 1887
Combs, John S., Clermont county Medical Society...Owensville, 1892

Conklin, W. J., Montgomery county Medical Society...Dayton, 1868
Conard, George R., Clinton county Medical Soc.....New Vienna, 1890
Conden, John F., Miami county Medical Society.....Morrow, 1892
Cone, J. E., Mahoning county Medical Society.....Youngstown, 1889
Conn, Eli, Summit county Medical Society .....Akron, 1887
Conner, Phineas S., Academy of Medicine.....Cincinnati, 1868
Cook, G. F., Butler county Medical Society .....Oxford, 1885
Cook, J. E., Cleveland Medical Society.....Cleveland, 1895
Cooper, Albert, Central Ohio Medical Society.....Columbus, 1881
Cooperrider, C. A., Academy of Medicine.....Columbus, 1892
Cope, E. C., Belmont county Medical Society.....Cope, 1895
Corbin, Lee, Montgomery county Medical Society.....Dayton, 1892
Corlett, Wm. T., Cuyahoga county Medical Society...Cleveland, 1882
Corson, O. M., Butler county Medical Society.....Middletown, 1879
Cosgrove, Thos., Toledo Medical Association.....Toledo, 1892
Cotton, J. D., Washington county Medical Society.....Marietta, 1852
Courtwright, Alva P.....Circleville, 1871
Courtwright, Geo. S.....Lithopolis, 1867
Cowan, F., N. C. O. Medical Society.....Ashland, 1896
Cox, J. M., Ross county Medical Society.....South Salem, 1877
Craig, J. Harvey, N. C. O. Medical Society.....Mansfield, 1886
Crane, A. M., Marion county Medical Society.....Marion, 1881
Craver, S. Belle, Toledo Medical Association.....Toledo, 1892
Crawford, A. J.....Gloucester, 1896
Creps, Adolphus H., Allen county Medical Soc...West Minster, 1892
Crile, Geo. W., Cuyahoga county Medical Society.....Cleveland, 1892
Crider, Chas. L., Muskingum county Medical Soc.....Zanesville, 1894
Crossland, Jeff. C., Muskingum county Med. Soc.....Zanesville, 1890
Crump, A. A., Jr., Holmes county Medical Society...Millersburg, 1892
Culbertson, Louis Rogers..... Zanesville, 1896
Curry, Frank H., Toledo Medical Asssociation.....Toledo, 1892
Curry, John C., Cincinnati Academy of Medicine.....Milford, 1892
Cushing, Edward F., Cuyahoga county Med. Soc.....Cleveland, 1892
CUSHING, H. K., Cuyahoga county Medical Society..Cleveland, 1857
Dandridge, N. Pendleton, Academy of Medicine.....Cincinnati, 1871
Darrah, Jos. Wilson.....Martin's Ferry, 1897
Davidson, N. P., Union county Medical Society.....Hilliards, 1890
Davison, John F., Northern Ohio Medical Soc...North Amherst, 1893
Davisson, J. Alexander, Preble county Medical Soc...Eldorado, 1896
Davis, Ben., Clark county Medical Society.....New Carlisle, 1895
Davis, Gilman R., Lawrence county Medical Society.....Ironton, 1896
De La Barre, Paul.....Port Clinton, 1892
Death, H. J., Warren county Medical Society.....Franklin, 18[illegible]

DeCourcy, W. E., Academy of Medicine... .....Cincinnati, 1892
Denman, Wm. C., Marion county Medical Society.....Marion, 1882
Dennis, W. H.....Burbank, 1895
Deuschle, W. D., Academy of Medicine.....Columbus, 1885
DeVilbiss, Allen, Toledo Medical Association.....Toledo, 1887
Dick, W. L., Academy of Medicine.....Columbus, 1892
Dickey, Thos. A., Butler county Medical Society...Middletown, 1879
Dine, C. L., Northwestern Ohio Med. Ass'n .....Minster, 1893
Dixon, M. F., Academy of Medicine.....Columbus, 1895
Dixon, W. A., Brown county Medical Society.....Ripley, 1889
Dolina, J. F., Montgomery county Medical Society.....Dayton, 1892
Donnelly, James, Toledo Medical Association.....Toledo, 1892
Dorman, H. W., Ashtabula county Medical Society.....Harbor, 1886
Dorsey, Jos. F..... .... Dresden, 1894
Downs, Samuel.....Waterville, 1876
Dunlap, C. O.....Athens, 1881
Duncan, A. M., Crawford county Medical Society.....Bucyrus, 1886
Duncan, James A., Toledo Medical Association.....Toledo, 1874
Dunham, J. M., Academy of Medicine.....Columbus, 1895
Dunham, W. H., Academy of Medicine.....Cincinnati, 1892
Dutton, C. F., Cuyahoga county Medical Society.....Cleveland, 1880
Eakins, Jehu, Gallia county Medical Society.....Patriot, 1894
Eddy, Chas. W., Washington county Medical Society ..Marietta, 1888
Edwards, R. C..... .....W. Carlisle, 1895
Eichberg, Jos., Academy of Medicine.....Cincinnati, 1882
Ellis, Samuel B., Montgomery county Medical Society ..Dayton, 1897
Ellsberry, A. M., Brown county Medical Society...Georgetown, 1892
Ely, J. S., Belmont county Medical Society.....Barnesville, 1892
Emerick, E. J., Central Ohio Medical Society.....Columbus, 1895
Emmons, D. R., Champaign county M. Soc.....North Lewisburg, 1895
Entrekin, F. W., Hancock county Medical Society.....Findlay, 1892
Ervin, N. B., Sandusky county Medical Society.....Gibsonburg, 1891
Esch, Jos. P., Erie county Medical Society.....Huron, 1892
Evans, A. E., Central Ohio Medical Society.....Columbus, 1882
Evans, Otho, Warren county Medical Society.....Franklin, 1892
Evans, Geo. B., Montgomery county Medical Society.....Dayton, 1892
Everts, Orpheus, Academy of Medicine.....Cincinnati, 1885
Faber, Chas. A., Toledo Medical Association.....Toledo, 1892
Fackler, John E..... ....Versailles, 1879
Farnsworth, G. B., Cleveland Medical Society.....Cleveland, 1895
Fassig, J. M., Muskingum county Medical Society.....Zanesville, 1893
Faucett, R. C., Union Med. Ass'n of Columbiana.....N. Jackson, 1896
Feil, G. H., Cleveland Medical Society.....Cleveland, 1897

Fels, Geo. W., Academy of Medicine.....Cincinnati, 1892
Fella, F. J., Toledo Medical Association.....Toledo, 1892
Finley, Mary Jordan, Academy of Medicine.....Mansfield, 1897
Fisher, A. W., Toledo Medical Association.....Toledo, 1892
Fisher, W. H., Toledo Medical Association.....Toledo, 1892
Fisher, P.....Cincinnati, 1892
Fitzpatrick, T. V., Academy of Medicine.....Cincinnati, 1890
Fitzsimmons, J. F., Crawford county Medical Society..Bucyrus, 1892
Fletcher, Mordecai H., Academy of Medicine.....Cincinnati, 1892
Fleming, J. C.....Carlisle, 1892
Flower, W. R., Ashtabula county Medical Society.....Ashtabula, 1895
Floyd, J. C. M., Jefferson county Medical Soc.....Steubenville, 1884
Foertmeyer, C. H., Academy of Medicine.....Cincinnati, 1892
Fogel, L. J.....Cincinnati, 1892
Foltz, Tobias H., Northwestern Ohio Med. Ass'n.....Lima, 1892
Folk, Peter.....Deavertown, 1894
Forcheimer, F,. Academy of Medicine.....Cincinnati, 1892
Formorin, J. L., Clermont county Medical Society...Marathon, 1892
FORBES, S. F., Toledo Medical Association.....Toledo, 1856
Foshay, P. Max., Cleveland Medical Society.....Cleveland, 1882
Foster, G. F., Ross County Medical Society....Kingston Centre, 1882
Fowler. Silas W.....Delaware, 1873
Fox, J. F., Tuscarawas county Medical Soc....New Philadelphia, 1895
Fox, Curtis L., Ashtabula county Medical Society.....Kingsville, 1897
Fraker, H. C., Academy of Medicine.....Columbus, 1895
Francis, A. W., Brown county Medical Society.....Ripley, 1892
Fraser, J. M., Cuyahoga county Medical Society.....Cleveland, 1892
Fraunfalter, J.....Canton, 1886
French, Jas. M., Academy of Medicine.....Cincinnati, 1892
FULLER, S. W.....Bellefontaine, 1853
Fullerton, Erskine B., Academy of Medicine.....Columbus, 1894
Gage, Rawson S, Washington county Medical Society..Qualey, 1892
Gahm. J. L., Hempstead Academy of Medicine.....Jackson, 1895
Gale, Geo. T., Washington county Medical Society.....Newport, 1888
Galloway, C. M., Green county Medical Society.....Xenia, 1888
Galloway, W. A., Green county Medical Society.....Xenia, 1890
Gardiner, W. G., Northwestern Ohio Med. Ass'n.....Toledo, 1892
GAY, N.....Columbus, 1848
Gehritt, T. M., Northwestern Ohio Med. Ass'n.....Deshler, 1892
Getzloff B., Shelby county Medical Society.....Wapakoneta, 1895
Geyer, Jos. L., Muskingum county Medical Society.....Norwich, 1892
Gibbon, H. B., Northwestern Ohio Med. Ass'n.....Tiffin, 1891
Gifford, Wm. R., Toledo Medical Association.....Toledo, 1892

Gillette, Wm. J., Toledo Medical Association .....Toledo, 1892
Gilliam, D. Tod., Academy of Medieine.....Columbus, 1873
Glenn, W. W., Highland county Medical Society.....Hillsboro, 1895
Goebel, Anna M., Allen county Medical Society.....Lima, 1892
Goetz, F. E., Cuyahoga county Medical Society.....Cleveland, 1892
Goodhue, Geo., Montgomery county Medical Society....Dayton, 1884
Goode, B. P., Academy of Medicine.....Cincinnati, 1892
Gores, F. C., Academy of Medicine .....Cincinnati, 1892
Gordon, O. F., Cuyahoga county Medical Society.....Cleveland, 1892
Gordon, Patrick A.....Junction City, 1894
GORDON, T. W., Brown county Medical Society...Georgetown, 1849
Goss, C. W.....Lancaster, 1895
Goss, J. H., Central Ohio Medical Society..... .....Lancaster, 1884
Graham, John C., Academy of Medicine.....Denver, Colo., 1892
Graefe, Wm., Erie county Medical Society .....Sandusky, 1874
Graefe, Chas., Erie county Medical Society.....Sandusky, 1891
Granger, Francis M., Highland county Medical Soc.....Russell, 1881
Gray, C. G., Lawrence county Medical Society.....Ironlon, 1896
Gray, Francis C., Montgomery county Medical Society..Dayton, 1894
Green, Henry S., Morrow county ....Cardington, 1878
Greene, D. W., Montgomery county Medical Society .....Dayton, 1882
Griffis, F. C..... .....Mt. Gilead, 1896
Grimm, Adolph, Academy of Medicine.. .....Cincinnati, 1892
Groves, J. E., Tuscarawas county Medical Society..Uhrichsville, 1884
Guerin, Z. F., Central Ohio Medical Society.....Columbus, 1884
Guiss, W. H., Crawford county Medical Society .....Tiro, 1895
Haldeman, John S., Muskingum county Med. Soc.....Zanesville, 1885
Halderman, S. S., Hempstead Mem. Academy.....Portsmouth, 1896
Hall, Willis W., Clark county Medical Society.....Springfield, 1882
Hall, Rufus B., Academy of Medicine.....Cincinnati, 1884
Hall, C. T., Warren county Medical Society.....Mason, 1892
Hall, Willard A., Ross county Medical Society.....Chillicothe, 1896
Hamann, C. H., Cleveland Medical Society.....Cleveland, 1895
Hamer, W. W., American Medical Association..... Bellefontaine, 1895
Hamilton, Horatio A., Wood county Medical Soc.....Perrysburg, 1886
Hamilton, W. D., Academy of Medicine.....Columbus, 1886
Hamilton, L. D., Marion county Medical Society.....Marion, 1896
Hamilton, C. S., Academy of Medicine..... .Columbus, 1891
HAMILTON, J. W., Academy of Medicine..... .....Columbus, 1849
Hancock, W. D., Butler county Medical Society.....Mellville, 1892
Haney, Josiah C .... Dalton, 1896
Hardy, Martin V., Washington county Medical Soc.....Marietta, 1892
Hardy, John C., Washington county Medical Society....Marietta, 1886

Hardy, Irene.....Massillon, 1897
Hart, Romeyn B., Jr., Washington county Med. Soc.....Marietta, 1892
Hart, C. S.....Marietta, 1895
Hart, Samuel, Washington county Medical Society.....Marietta, 1887
Hartman, Geo. W., Northwestern Ohio Med. Ass'n.... Wauseon, 1887
Hartman, S. D., Miami county Medical Soc.....Tippecanoe City, 1874
Harrison, E. B., Northwestern Ohio Medical Ass'n.....Napoleon, 1869
HARMON, JULIAN Trumbull county Medical Society..Warren, 1857
Harmon, J. D., Trumbull county Medical Society.....Warren, 1895
Harper, E. A.....Columbus, 1896
HART, B. F., Washington county Medical Society.....Marietta, 1854
Hasencamp, Oscar, Toledo Medical Association.....Toledo, 1891
Hathaway, Harrison, Toledo Medical Association...East Toledo, 1874
Hatch, Chas. A.....Newark, 1893
Hawley, Edwin P., Cuyahoga county Medical Soc.....Cleveland, 1892
Hayes, J. D., Perry county Medical Society.....Somerset, 1895
Haynes, J. T., Erie county Medical Society.....Sandusky, 1893
Haynes, J. Purcell, Toledo Medical Association.....Toledo, 1892
Hayward, E. T.....Waterford, 1896
Heaton, Townsend, Academy of Medicine.....Aberdeen, 1892
Heard, Eugene N., Northwestern Ohio Med. Ass'n....Sandusky, 1892
Heffner, G. W.....Circleville, 1895
Heiter, Carl, Erie county Medical Society.....Sandusky, 1875
Heidrick, Louis W., Toledo Medical Association.....Toledo, 1892
Hendershot, B. C., Tuscarawas county Medical Society.....
.....New Philadelphia, 1897
HENDERSON, D. W.....Marysville, 1856
Henderaon, Robert, Champaign county Medical Soc.....Urbana, 1892
Henderson, Geo. W., Northwestern Ohio Med. A.....West Cairo, 1892
Hendley, F. W., Academy of Medicine.....Cincinnati, 1892
Henry, A. G., Northwestern Ohio Med. Ass'n....North Baltimore, 1892
Hendrixson, Hugh, Academy of Medicine.....Columbus, 1868
Herrick, H. J., Cuyahoga county Medical Society.....Cleveland, 1868
Herrick, H. B., Cuyahoga county Medical Society.....Cleveland, 1895
Hersh, E. G., Hancock county Medical Society..... McComb, 1892
Hewetson, H. L., Tuscarawas county Med. Soc.....Urichsville, 1895
Hewetson, Alex. H., Belmont county .....St. Clairsville, 1894
Hiestand, E. B., Northwestern Ohio Medical Ass'n.....Kenton, 1884
Hillbish, Fred S.....Fremont, 1878
Hill, Frank E., Clermont county Med. Soc.....Mt. Auburn, Ky., 1892
Hill, Wm. W., Wood county Medical Society.....Weston, 1892
Hill, N. S., Clermont county Medical Society.....Neville, 1866
Hillkowitz, Wm., Academy of Medicine.....Cincinnati, 1892

Hines, J. Arthur.....Van Wert, 1879
Hiner, S. B., Allen county Medical Society.....Lima, 1874
Hinckley, H. D., Butler county Medical Society.....Cincinnati, 1887
Hixon, M. M., Northwestern Ohio Med. Ass'n.....Dupont, 1887
Hobbs, Wilbert A., Union county Medical Soc...East Liverpool, 1889
Hobson, John A., Belmont county Medical Society.....Flushing, 1891
Hobson, J. T., Cleveland Medical Society ....Cleveland, 1897
Hoge, W. D., Eastern Ohio Medical Society..... ...Portland Sta., 1895
Hoege, G. L., Northwestern Ohio Med. Ass'n.....Fostoria, 1895
Hoeltge, A. E., Academy of Medicine ... .Cincinnati, 1892
Hoff, Jos. W., Meigs county Medical Society,.....Pomeroy, 1872
Holliday, W. W., Cuyahoga county Medical Society...Cleveland, 1892
Holliday, Benj. W., Cuyahoga county Medical Soc.....Cleveland, 1875
Holcomb, Leroy S.....Pennville, 1894
Holdren, G. W., Fayette county Medical Soc.....Bloomingburg, 1892
Hollister, Geo. A.....Toledo, 1897
Holman, A. W..... .....Circleville, 1895
Holmes, C. R , Academy of Medicine.....Cincinnati, 1892
Holston, J. G. F., Muskingum county Medical Soc....Zanesville, 1892
Homes, W. W.....Columbus, 1895
Hoover, C. F., Cleveland Medical Society..... .....Cleveland, 1896
Hoover, Collins M., Union Medical Society.....Alliance, 1885
Hoover, Thos. C., Academy of Medicine.....Columbus, 1891
Hoover Albert, Northeastern Ohio Med. Soc..... ..... Akron, 1892
Hoppe, H. H., Academy of Medicine.....Cincinnati, 1892
Hottendorf, Louis P., Academy of Medicine..... ....Cincinnati, 1892
Hous, Geo. W., Montgomery county Medical Society....Clayton, 1892
Hough, C. A., Warren county Medical Society.....Lebanon, 1890
Hough, Wayland S., Summit county Med. Soc...Cuyahoga Falls, 1875
House, A. F ....Cleveland, 1880
House, Chas. F.....Painesville, 1897
Howard, W. T., Cuyahoga county Medical Society.....Cleveland, 1895
Howard, A. B., Cleveland Medical Society.....Cuyahoga Falls, 1897
Howell, J. Morton, Fayette county Medical Society..... .....
.....Washington C. H., 1892
Howells, James Owen, Belmont county.....Bridgeport, 1897
Hubbard, Thomas, Toledo Medical Association..... .....Toledo, 1889
Hudson, J. F., Northeastern Ohio Med. Ass'n.....Canton, 1892
Hughes, E. E..... .....Oak Hill, 1895
Hughes, F. M..... .....Vermillion, 1892
Hughes, D. E..... Delaware, 1895
Hughey, J. W., Fayette county..... .....Chillicothe, 1992
Hulin, O. W., Union Medical Association of N. E. O..Greenford, 1895

Humiston, Wm. H., Cuyahoga county Medical Soc.....Cleveland, 1880
Humphrey, C. H., Montgomery county Medical Society...Dayton, 1892
Hunt, A. H.....Wooster, 1892
Hurd, A., Hancock county Medical Society.....Findlay, 1870
Hussey, M. F., Shelby county Medical Society.....Sidney, 1892
Huston, W. O.....Bellaire, 1894
Hyatt, E. H.....Delaware, 1862
Ikirt, G. P., Champaign county.....East Liverpool, 1882
Ingersoll, J M., Cleveland Medical Society.....Cleveland, 1897
Ireland, W. E., Fayette county Medical Soc...Washington C. H., 1887
Ireland, S. A., Fayette county Med. Soc.....Washington C. H., 1892
Ireton, E. C.....Columbus, 1892
Irvin, John W., Ashland county.....Magnetic Springs, 1896
Jackson, T. W., Northeastern Ohio Medical Ass'n.....Akron, 1895
Jacobs, Harold H., Northeastern Ohio Med Ass'n.....Akron, 1892
Jacobs, M. M., Butler county Medical Society .....Hamilton, 1895
Jacobs, W. C.....Akron, 1892
James, W. S., Cuyahoga county.....Cleveland, 1897
Jenkins, M. J., Central Ohio Medical Society.....Plain City, 1895
Jenks, Wm. O., Cuyahoga county.....Nottingham, 1892
Jenner, Henry G., Montgomery county Medical Soc.....Dayton, 1897
Jennings, Ellis, Montgomery county Medical Society....Dayton, 1867
Jennings, Gainor, Miami county Medical Society...West Milton, 1892
Jewett, H. S., Montgomery county Medical Society.....Dayton, 1871
Johnson, O., Central Ohio Medical Society.....Worthington, 1878
Johnson, Fred L.,.....Worthington, 1897
Johnston, Alice M., Central Ohio Medical Society.....Columbus, 1895
Jones, Wm. A.....Toledo, 1892
Jones, L. M., Greene county Medical Society.....Jamestown, 1892
Jones, J. D., Cuyahoga county Medical Society.....Cleveland, 1870
Jones, Geo. E., Academy of Medicine.....Cincinnati, 1892
JONES, R. E., Northwestern Ohio Med. Ass'n.....Gomer, 1863
JONES, T. W.....Columbus, 1847
Joseph, Leopold, Academy of Medicine .....Cincinnati, 1892
Judkins, Wm., Academy of Medicine.....Cincinnati, 1892
Judkins, C. P., Academy of Medicine.....Cincinnatt, 1887
Judkins, Jas. A .....Barnesville, 1894
Judy, C. L., Montgomery county Medical Society ..Miamisburg, 1896
Junkerman, Geo. S., Academy of Medicine.....Cincinnati, 1892
Kaestlen, Samuel E., Cuyahoga county Med. Soc.....Cleveland, 1892
Kahn, L., Academy of Medicine.....Columbus, 1895
Kammann, Albert A., Academy of Medicine.....Cincinnati, 1892
Kautz, J. W., Brown county Medical Society.....Arnheim, 1892

KAY, ISAAC, Clarke county Medical Society .....Springfield, 1853
Keck, Peter A., Academy of Medicine.....Cincinnati, 1892
Kelly, H. R., ...Galion, 1868
Keller, B. T., Fayette county Medical Society.....Bloomingburg, 1891
Keller, Thos. F.....Tiffin, 1887
Kemp, Lucia, Crawford county Medical Society .....Bucyrus, 1892
Kendig, Elias V., Ashland county Medical Society ...Hayesville, 1874
Kerns, J. F., Walpole, Eastern Ohio Med. Soc..... Bellaire, 1892
Kiely, W. E., Academy of Medicine.....Cincinnati, 1892
KINSMAN, D. N., Academy of Medicine .....Columbus, 1864
Kimmell, J. A., Hancock county Medical Society .....Findlay, 1892
King, J. R., Academy of Medicine.....Cincinnati, 1892
Kirkley, Cyrus A., Toledo Medical Association.....Toledo, 1874
Kitchen, Francis A., Toledo Medical Association.....Toledo, 1892
Kline, P. J., Hempstead Academy of Medicine .....Portsmouth, 1895
Knowlton, W. A .....Cleveland, 1892
Koehler, Max, Academy of Medicine..... .....Cincinnati, 1893
Kolb, Matthew G., Cuyahoga county Medical Society, Cleveland, 1892
Krause, B., Cuyahoga county Medical Society..... Cleveland, 1880
Krause, L. S., Montgomery county Med. Soc....West Carrollton, 1892
Kreiger, Gustave L .....Madisonville, 1884
Krouse, Louis J., Academy of Medicine.....Cincinnati, 1892
Landman, Gtto, Toledo Medical Association.....Toledo, 1892
Langdon, F. W., Academy of Medicine .....Cincinnati, 1892
LANDON, C. P., Central Ohio Medical Society.....Columbus, 1851
Larimore, F. C., N. C. O. Medical Society.....Mt. Vernon, 1871
Lash, Josiah W., Ross county Medical Society.....Chillicothe, 1879
Lathrop, Arthur B., N. W. O. M. A.,.....Swanton, 1887
Lawless, James T., Toledo Medical Association .....Toledo, 1887
Lawrence, F. F., Academy of Medicine.....Colmmbus, 1888
Lawrence, J. C., Academy of Medicine.....Columbus, 1895
Leach, Sherman..... .....Mt. Sterling, 1888
Leahy, Maurice..... .....Tiffin, 1891
Lee, J. L., N. E. O. M. A..... .....Akron, 1892
LeFevre, Edwin, Shelby county Medical Society .....Sidney 1891
Lehman, C. W., Preble county Medical Society .....Eaton, 1895
Leick, G. F., Cuyahoga county Medical Society.....Cleveland, 1892
Lenhart, Charles M., ...Zanesville, 1894
Leonard, W. W ....Delaware, 1891
Leonard, E. L.....Democracy, 1897
LEONARD, B. B., N. O. M. A.....West Liberty, 1854
Leslie, J. M., Ross county Medical Society ....Chillicothe, 1878
Lewis, W. C., Fairfield county..... .....Rushville, 1869

Lichliter, David C., Montgomery county, Medical Society, Dayton 1892
Lightner, S. B., Clinton county Medical Society.....Sabina, 1888
Lincoln, William, Cleveland Medical Society..... Cleveland, 1896
Linden, W. E., Cuyahoga county Medical Society.....Brooklyn, 1897
Lindsay, J. A., Eastern Ohio Medical Society.....Salineville, 1895
Longfellow, R. C., Academy of Medicine .....Cincinnati, 1892
Longsworth, M. J .....St. Mary's, 1897
Love, Ephraim W., Brown county Medical Society, Fayetteville, 1892
LOVING, STARLING, Academy of Medicine.....Columbus, 1858
Lower, Wm. E., Cleveland Medical Society.....Cleveland, 1896
Lowman, J. H., Cuyahoga county Medical Society.....Cleveland, 1877
Lowry, Jos. W., Lawrence county Medical Society.....Ironton, 1896
Lucas, V. C., Cuyahoga county Medical Society.....Cleveland, 1892
Lusk, S. B., Marion county Medical Society.....Waynesfield, 1895
Lyle, Benjamin F., Academny of Medicine.....Cincinnati, 1892
LYMAN, C. N., Northeastern Ohio Medical Association, Wadsworth 1852
McCLURE, James, Washington county Medical Society ..... Marietta, 1866
McClung, John C., Northwestern Ohio Medical Association, Leipsic..... 1887
McCollum, E. J., Northwestern Ohio Medical Association, Tiffin..... 1871
McCoy, Clem., D., Northwestern Ohio Medical Association, Kenton..... 1892
McCurdy, S. L.....Pittsburgh, Pa., 1882
McCurdy, John, Mahoning county Medical Society, Youngstown 1870
McCullough, Jos. A.....Steubenville, 1894
McCullough, A. H., Academy of Medicine.....Mansfield, 1897
McClellan, J. S., Belmont county Medical Society.....Bellaire, 1894
McDougal, John G., Hildreth District Medical Association, New Lexington..... 1894
McGee, John B., Cuyahoga connty Medical Society, Cleveland, 1880
McGavren, Geo. W., Northwestern Ohio Medical Association, Van Wert..... 1892
McGavren, Samuel B.....Cadiz, 1887
McIntire, William, Central Ohio Medical Society, Warrensburg, 1881
McKee, Edward S., Academy of Medicine.....Cincinnati, 1886
McKinley, E. Burris, Northwestern Ohio Medical Association, Vaughnsville 1887

McKecknie, Josiah B., Clinton county Medical Society, Cincinnati 1892
McLean, J. T. Tuscarawas county Medical Society, New Philadelphia..... 1884
McLean, W. F., Cleveland Medical Society.....Elyria, 1897
McMurray, A. B.....Marion, 1879
McQuaid, Thos. L., Guernsey county.....Cambridge, 1894
McVety, A. F., Lucas county Medical Society .....Toledo, 1895
Macready, James, Butler county Medical Society.....Monroe, 2885
Mackenzie, J. C., Academy of Medicine.....Cincinnati, 1892
Maerker, A. E. H., Northwestern Ohio Medical Association, ... Napeleon, 1892
Malsbary, George E., Academy of Medicine... .....Cincinnati ,1897
Marquart, Oscar M., Greene county Medical Society.....Osborn, 1891
Markley, Lee, Brown county Medical Society.....Georgetown, 1892
Marshal, R. J., Eastern Ohio Medical Society.....East Liverpool, 1897
Martin, James, Northeastern Ohio Medical Association, Fredericksburg 1892
Martin, John T., Marion county Medical Society..... Marion, 1884
Martin, John, C., Hancock county Medical Society.....Findlay, 1887
Martin, Thos., Cleveland Medical Society.....Cleveland, 1897
Marsh, F. O., Academy of Medicine.....Cincinnati, 1892
Marshall, G. M., Hempstead Academy of Medicine, Portsmouth..... 1895
Marshall, W. C., Montgomery county Medical Society, Trotwood 1892
Marquic, Thomas B., Northeastern Ohio Medical Association, New Lisbon 1892
Mattoon, F. N., Madison county.....Plain City, 1881
Matthias, A. C., Northwestern Ohio Medical Association..... Gilboa, 1892
Maynard, O. T.....Elyria 1892
May, John B .....New Holland, 1892
Means, Charles S., Columbus Academy of Medicine, Columbus, 1896
Means, W. J., Central Ohio Medical Society.....Co umbus 1892
Melick, William A., Muskingum county Medical Society, Zanesville..... 1892
Merriman, D. J.....Painesville, 1894
Merriam, E. D., Ashtabula county Medical Society.....Conneaut, 1884
Merz, Chas. H., Erie county Medical Society.....Sandusky, 1891
Messenger, A. C., Greene county Medical Society .....Xenia, 1896
Metzler, Abraham S., Holmes county Medical Society.....Baltic, 1874
Mills, J. T., Central Ohio Medical Society .....Jersey, 1878

Miller, John F., Shelby county Medical Society...Port Jefferson, 1892
Miller, T. Clarke, Northeastern Ohio Medical Association.....
.....Massillon, 1893
Miller, Delbert J., Union county Medical Society... ..N. Benton, 1892
Miller, A. T., Tuscarawas county Medical Society....Shanesville, 1890
Milliken, Dan., Butler county Medical Society.....Hamilton, 1879
Milliken, B. L., Cuyahoga county Medical Society.....Cleveland, 1885
Mills, C. H., Northwestern Ohio Medical Society .....Toledo, 1888
Mitchell, E. W., Academy of Medicine.....Cincinnati, 1892
Mitchell, Geo., Academy of Medicine .....Mansfield, 1897
Moody, Milo M., Union county Medical Society.....
.....Chatham Center, 1892
Moore, C. A..... .....Cambridge, 1894
Moore, D. L., Academy of Medicine ....Columbus, 1895
Moore, Lyman G., Trumbull county Medical Society..Kinsman, 1878
Moore, H. M. W., Academy of Medicine..... .....Columbus, 1894
Morgan, R. J., Northwest Ohio Medical Association...Van Wert, 1895
Morgan, J. F., Hempstead Academy of Medicine..... Jackson, 1895
Mory, J. J.....St Henry's, 1871
Morehouse, G. W..... Sparta, 1890
Morris, Joseph, Northwestern Ohio Medical Association.....
.....Columbus Grove, 1879
Morris, Frank, Northwestern Ohio Medical Association.....
..... Columbus Grove, 1892
Mosgrove, J. M., Champaign county Medical Society.....Urbana, 1884
MOUNTS, J. L., Warren county Medical Society.....Morrow, 1860
Murphy, C. F.....Portsmouth, 1895
Murphy, John A., Academy of Medicine.....Cincinnati, 1872
Murphy, John W., Academy of Medicine.....Cincinnati, 1892
Murbach, Andrew J., Northwestern Ohio Medical Association...
.....Archbald, 1874
Murray, Langdon S., Northeastern Ohio Medical Association.....
..... Medina, 1870
Myers, Noah, Clarke county Medical Society..... Springfield, 1892
Myers, I. A., N. C. O. Medical Society .....Shelby, 1892
Myers, J. E., Clarke county Medical Society..... .....Springfield, 1892
Nash, E. King, Summit county .....Montrose, 1876
Nau, J. G., Fairfield county.....Carroll, 1878
Neil, Alexander.....Columbus, 1868
Nelson, J. W., Clarke county Medical Society..... Springfield, 1869
Newton, C. W..... .....Toledo, 1895
Niles, L. E.....Springfield, 1896
Noble, N. T.....St. Mary's, 1892

Noble, Herbert E., Northwestern Ohio Med. Asso...Stony Ridge, 1892
Noble, Chas. D.....Oberlin, 1893
Norris, Thos. B., Franklin county.....Alton, 1882
North, John, Toledo Medical Association.....Toledo, 1891
Norton, F. B., Cuyahoga county Medical Society.....Cleveland, 1892
Noyes, H. J., Hildreth District Medical Asso....McConnellsville, 1888
Nungesser, J. J., Cleveland Medical Society.....Cleveland, 1895
Obitz, N.....Columbus, 1895
Oglesbee, Wm. E., Warren county Medical Soc.....Waynesville, 1892
Ohlmacher, A. P., Cuyahoga county Medical Society..Cleveland, 1895
Oliver, J. C., Academy of Medicine.....Cincinnati, 1892
Olmstead, D. S., Holmes county Medical Society.....Millersburg, 1892
Osborn, Mary E......Cincinnati, 1892
Oster, L. W., Cuyahoga county Medical Society .....Cleveland, 1892
Overly, John E., Central Ohio Medical Society.....Columbus, 1888
Palmer, Chauncey D., Academy of Medicine.....Cincinnati, 1871
Patterson, A. V......Mansfield, 1861
Patrick, Nathan E., Muskingum county Med. Soc.....Zanesville, 1894
Patrick, O. H.....Ada, 1895
PEARCE, ENOCH.....Steubenville, 1859
Pennell, W. W.....Fredericktown, 1884
Perkins, D. S., Cuyahoga county.....Cleveland, 1897
Peskind, Arnold, C. C. Medical Society.....Cleveland, 1892
Peter, Robert, Tuscarawas county Medical Society .....Toledo, 1891
Petitt, Richard R., Montgomery county Medical Society..Dayton, 1885
Philips, W. S., N. W. Ohio Medical Society.....Belle Centre, 1895
Piper, William, Belmont county Medical Society .....Bellaire, 1892
Plummer, Frank E .....Coalton, 1896
Pomeroy, Frank S., Cleveland Medical Society.....Chardon, 1897
Porter, W. D., Academy of Medicine.....Cincinnati, 1892
Potter, S. B.....Fredericktown, 1892
Potter, Nathan, Ross county Medical Society.....Adelphi, 1890
Potts, Chas. N., Allen county Medical Society.....Colorado, 1892
Powell, Wm. S .....Defiance, 1881
Pratt, L. C .....Bellefontaine, 1895
Price, F. K., Tuscarawas county Medical Society.....Dennison, 1895
Prior, Amelia J.....Xenia, 1892
Probst, C. O., Central Ohio Medical Society. .....Columbus, 1892
Pugh, Frank H., Northwestern Ohio Med. Ass'n.....Toledo, 1892
Pumphrey, R. J., Belmont county Medical Society.....Massillon, 1896
Quirk, Howard W., Cuyahoga county Medical Society.Cleveland, 1889
Quinn, Allen T., Clinton county Medical Society .....Wilmington, 1881
Rambo, Cyrus M., Muskingum Co. Medical Society...Zanesville, 1894

Ranny, Sylvester W.....New Albany, 1878
Rank, W. G .....Newark, 1895
Rankin, Theodore W., Academy of Medicine.....Columbus, 1881
Ransohoff, Joseph, Academy of Medicine .....Cincinnati, 1879
Rardin, Joseph S., ...Portsmouth, 1892
Ravogli, Augustus, Academy of Medicine..... Cincinnati, 1892
Ray, J. B., Pike county Medical Society.....Omega, 1896
Ray, J. H., Southern Ohio Academy of Medicine.....Coalton, 1895
Rea, E. H., Eastern Ohio Medical Society .....Startle, 1897
REAMY, THAD. A., Academy of Medicine.....Cincinnati, 1855
Redrow, I., Batavia county Medical Society.....Williamsburg, 1895
Reed, Calvin H., Toledo Medical Association.....Toledo, 1873
*Reed, R. Harvey, N. C. Ohio Medical Association.....Columbus, 1884
Reed, T. J..... .....Massillon, 1881
Reed, Chas. A. L., Academy of Medicine.....Cincinnati, 1881
Reemelin, R. H., Academy of Medicine .....Cincinnati, 1892
REEVE, J, C., Montgomery county Medical Society.....Dayton, 1861
Reeve, J. C. Jr., Montgomery county Medical Society....Dayton, 1892
Reif, Chas. F.....Fremont, 1892
Reinhart, James C., Toledo Medical Association.....Toledo, 1887
Reynolds, R. D .....Cleveland, 1897
Rheinfrank, J. H., N. W. Ohio Medical Association...Perrysburg, 1886
Rheinfrank, W. H..... .....Perrysburg, 1895
Renneker, A. P.....Cincinnati, 1892
Rhu, August, Marion county Medical Society .....Marion, 1886
Richards, A., Perry county Medical Society.....New Lexington, 1895
Richardson, Alonzo B., Academy of Medicine.....Columbus, 1891
Ricketts, Edwin, Academy of Medicine..... .....Cincinnati, 1891
Ridgeway, N. B., Northern Central Med. Soc.....Galion, 1878
Riggs, J. M..... .....Bryan, 1873
Robb, Hunter, Cleveland Medical Society.....Cleveland, 1897
Robinson, James D., Wayne county Med. School.....Wooster, 1856
Roberds, T. W., Highland county Medical Society.....Bell, 1892
Rodebaugh, Henry A..... .....Marysville, 1890
Rodgers, J. H .....Louisville, 1889
Rogers, H. W., Cuyahoga county Medical Society.....Cleveland, 1892
Rogers, W. K., Academy of Medicine.....Columbus, 1895
ROGERS, J. H., Clarke county Medical Society.....Springfield, 1859
Romspert, J. A., Montgomery county Med. Soc..Dayton Asylum, 1892
Root, H. A., Toledo Medical Association ..... Toledo, 1892
Rosenwasser, M., Cuyahoga county Medical Society...Cleveland, 1880
Rosenfeld, A., Academy of Medicine .....Cincinnati, 1892
Rosengrant, Thomas S .....Batesville, 1894

*Rock Springs, Wyo.

Roulet, Chas., Toledo Medical Association.....Toledo, 1892
Rouse, Wm. L., Green county Medical Society.....Paintersville, 1896
Row, Geo., Pickaway county Medical Society.....Circleville, 1881
Rowles, W. T., Academy of Medicine.....Columbus, 1888
Rudy, A. S., Allen county Medical Society.....Lima, 1892
Ruess, Henry A., North Central Ohio Medical Soc.....Mansfield, 1892
Russell, E. S., Tuscarawas county Medical Society..Tuscarawas, 1880
Russell, George C., Cuyahoga county Medical Soc.....Cleveland, 1892
Russell, John E., Northwestern Central Ohio Medical Society...
.....Mt. Vernon 1897
Rutler, H. C.....Gallipolis, 1897
Sabin, Thomas M., Trumbull county Medical Society...Warren, 1893
Sager, Joseph, Northwestern Ohio Medical Association...Celina, 1882
Sager, B. E.....Cleveland, 1897
Sampson, G. W.....Upper Sandusky, 1895
Santee, Leon B., Stark county Medical Society...Marlborough, 1885
Sattler, Robert, Academy of Medicine.....Cincinnati, 1872
Sawyer, J. P., Cuyahoga county Medical Society .....Cleveland, 1892
Scatterday, W. F.....Columbus, 1895
Schnetzler, H. Marcus, Toledo Medical Association.....Toledo, 1874
Schwab, Louis, Academy of Medicine.....Cincinnati, 1892
Schwab, Emanuel, Academy of Medicine.....Cincinnati, 1892
Schutzbach, J. C., Tuscarawas county Medical Soc.....Strasburg, 1892
Schooley, Lindley.....Belmont, 1894
Schueller, J. B., Central Ohio Medical Society.....Columbus, 1869
Scott, B. B., Knox county Medical Society.....Mt. Vernon, 1892
Scott, N. Stone, Cuyahoga county Medical Society.....Cleveland, 1892
Scott, Wm. Alfred, Fulton county.....Swanton, 1878
Scott, X. C., Northeastern Ohio Medical Association...Cleveland, 1874
SCOVILLE, S. S., Warren county Medical Society.....Lebanon, 1859
Scears, O. T., Erie county Medical Society.....Put-in-Bay, 1892
Seeley, W. W., Academy of Medicine.....Cincinnati, 1871
Sittel, Theo., Academy of Medicine.....Cincinnati, 1892
Sewell, S. G., Green county Medical Society...New Burlington, 1892
Shaw, Wm. E., Academy of Medicine.....Cincinnati, 1892
Shaller, John M., Academy of Medicine.....Cincinnati, 1892
Shalliott, Peter, Tuscarawas county Medical Soc.....Winesburg, 1891
Sharp, Amor W., Central Ohio Medical Society .....Columbus, 1892
Sharp, B. M., Shelby county Medical Society.....Sidney, 1885
Shea, Daniel P., Wayne county Medical Society.Fredericksburg, 1897
Sheldon, S. B., Brown county Medical Society.....Five Mile, 1882
Sherman, H. G., Cuyahoga county Medical Society...Cleveland, 1892
Shields, E. H., Academy of Medicine.....Cincinnati, 1895

Silver, D. R., Shelby county Medical Society.....Sidney, 1870
SINNETT, E., Linking county Medical Society.....Granville, 1850
Sipher, J. N., Cuyahoga county Medical Society.....Cleveland, 1892
Skeel, R. E., Cuyahoga county Medical Society.....Cleveland, 1892
Slocum, Charles E., Northwestern Ohio Med. Ass'n.....Defiance, 1874
Smith, D. M.....Newark, 1895
Smith, Wm. G., Portage county Medical Society.....Ravenna, 1885
Smith, H. H.....Lexington, 1892
Smith, J. M., Tuscarawas county Med. Soc.....New Philadelphia, 1884
Smith, Charles N., Toledo Medical Association.....Toledo, 1887
Smith, D. B., Cuyahoga county Medical Society.....Cleveland, 1892
Smith, C. W., Cleveland Medical Society.....Cleveland, 1897
Smith, Frederick K., Cuyahoga county Med. Soc.....Cleveland, 1897
Snodgrass, Jessie, Northwestern Ohio Medical Ass'n.....Kenton, 1887
Snyder, O.....London, 1895
SNYDER D. J., Harrison county Medical Society.....Scio, 1850
Snyder, S. P.....New Bedford, 1882
Snyder, Walter H., Toledo Medical Association.....Toledo, 1896
Southard, John Q.....Marysville, 1882
Souders, Samuel, Montgomery county Medical Society.....Dean, 1879
Souder, R. L., Northwestern Ohio Medical Association..Nevada, 1892
Speidel, C. G. E., Academy of Medicine.....Cincinnati, 1892
Spence, J. A., Wellsville Medical Society .....Pittsburg, Pa., 1888
Spencer, E. R., Northeastern Ohio Medical Ass'n...Doylestown, 1885
Spenzer, John G., Cuyahoga county Medical Society...Cleveland, 1896
Spiers, H. H.....Ravenna, 1892
Spurney, A. F., Cleveland Medical Society.....Cleveland, 1897
Stanton, Byron, Academy of Medicine .....Cincinnati, 1892
Straight, Howard S., Cuyahoga county Medical Soc...Cleveland, 1892
STANSELL, J. A.....Forest, 1866
Stamm, M. Sandusky county.....Fremont, 1891
Stark, Sigmar, Academy of Medicine.....Cincinnati, 1892
Stanley, E .....Sandusky, 1870
Steel, Robt. G , Seneca county Medical Society.....Melmore, 1897
Stein, G. S., Academy of Medicine.....Columbus, 1888
Steiner, D. W., Allen county Medical Society .....Lima, 1890
Stewart, John O., Greene county Medical Society .....Cedarville, 1892
Stewart, Wm. D., Toledo Medical Association .....Toledo, 1887
Stewart, Thomas H., Trumbull county Med. Soc....Church Hill, 1877
Stewart, Robt. W., Academy of Medicine.....Cincinnati, 1892
STEPHENS, E. B., Warren county Medical Society....Lebanon, 1853
Stephenson, Y., Brown county Medical Society.....Georgetown, 1892

Stevenson, George W., Cuyahoga county, Med Soc. ....Cleveland, 1892
Stevens, E. S., Warren county Medical Society .....Lebanon, 1866
Stillman, F. L., Academy of Medicine.....Columbus, 1895
STILLWELL, THOMAS, Sandusky county Medical Society.....
.....Fremont, 1857
Stinson, Chas. H.....Newark, 1894
Storey, Wm., Erie county Medical Society .....Castalia, 1884
Stockton, Geo., Academy of Medicine .....Columbus, 1895
STOCKSTILL, J. N., Clark county.....New Carlisle, 1857
Stricker, L., Academy of Medicine.....Cincinnati, 1895
Stucky, J. G., Holmes county .....Walnut Creek, 1897
Sudhoff, Geo. F., Academy of Medicine.....Cincinnati, 1892
Sutton, H. T., Muskingum county Medical Society...Zanesville, 1894
SWENEY, R. L.....Marion, 1859
Sykora, J., Cuyahoga county Medical Society... .....Cleveland, 1892
Taft, Jonathan, Academy of Medicine.....Cincinnati, 1892
Taggart, H. D., Summit county Medical Society.....Akron, 1892
Talley, C. F .....Hyattsville, 1895
Tangeman, C. W., Academy of Medicine .....Cincinnati, 1888
Taylor, Wm. H., Academy of Medicine.....Cincinnati, 1874
Taylor, Clovis M.. .....Columbus, 1894
Taylor, Frd. C., Cleveland Medical Society .....Cleveland, 1897
Telfair, Geo. M., Clinton county Medical Society...Bloomington, 1884
Templeton, A. M., Muskingum county Med. Soc .....Zanesville, 1892
Templeton, B. F., Muskingum county Medical Soc...Zanesville, 1892
Thomas, Frank W., Marion county Medical Society.....Marion, 1884
Thompson, C. E., Champaign county Medical Society.....
..... North Lewisburgh, 1896
Thompson, F. E., Morrow county Medical Society.....Marengo, 1895
Thompson, J. A., Academy of Medicine.. .....Cincinnati, 1892
Thompson, S. R., Tuscarawas county Med. Soc.....Uhrichsville, 1892
Thorn, S. S., Toledo Medical Association .....Toledo, 1873
Thompson, W. E..... .....St. Clairsville, 1897
Thorner, Max., Academy of Medicine.....Cincinnati, 1892
Thrasher, A. B., Academy of Medicine.....Cincinnati, 1876
Tichenor, E. J., Warren county Medical Society.....Lebanon, 1869
Titus, A., Hempstead Mem. Ass'n of Medicine.....Portsmouth, 1888
Titlow, Benatta D., Clark county Medical Society...Springfield, 1892
Tobey, Henry A., Toledo Medical Association.....Toledo, 1878
Todd, Fred A., Toledo Medical Association .....Toledo, 1892
Todd, J. H., Wayne county Medical Society.....Wooster, 1892
Towslee, Lillian G., Cleveland Medical Society .....Cleveland, 1897
Tracy, Jas. L., Toledo Medical Association ....Toledo, 1892

Trimble, C. E,, Crawford county Medical Society.....Crestline, 1892
Trimble, R. T., Clinton county Medical Society.....New Vienna, 1881
Trout, J. Frances.....Lancaster, 1895
Trush, J., Academy of Medicine .. ..Cincinnati, 1892
Tuckerman, L B., Cuyahoga county Med. Society.....Cleveland, 1895
Tydings, O., Piqua Society Clinical Medicine .....Piqua, 1892
Uhler, H. L., Marion county M. S.....Marion, 1895
Upson, Henry S., Cuyahoga county M. S .....Cleveland, 1888
Upson, Geo. D., Cleveland M. S.....Cleveland, 1897
Vail, D. T., Academy of Medicine.....Cincinnati, 1892
VANDERVOORT, J. W., Warren county M. S.....Harveysburg, 1864
Van Pelt, Chas. L., Toledo M. A.....Toledo, 1887
Van Nette, Wesley, Crawford county, M. S..... .....Poplar, 1892
VANNATA, E., Muskingum county .....Fultonham, 1855
Vigor, F. A., Fayette county Medical Society .....New Dover, 1884
Vorhes, B. C.....Lee, 1895
Vorhies, Elmer E.....Cambridge, 1894
Waggoner, Joseph, Portage county Medical Soc. .....Ravenna, 1870
Wagner, Henry P., Northwestern Ohio Med. Asso. .....Delphos, 1892
Wagenhals, F. W., Columbus Medical Society.....Columbus, 1885
Walker, Alonzo B., Union Medical Society.....Canton, 1882
Wall, J. J., Northeastern Ohio Med. Soc.....Mallet Creek, 1897
Ward, Wadsworth A., Ashtabula county M. S.....Conneaut, 1880
Warner, Frank, Academy of Medicine ....Columbus, 1884
Warner, C. J., N. Central Ohio Med. Soc.....Congress, 1892
Wardlow, Yeatman .....Columbus, 1897
Ward, Clarence S., Trumbull county Medical Soc.....Warren, 1875
Ward, Orin W.....Duncan's Falls, 1894
Waters, Geo. M., Columbus Academy of Medicine.....Columbus, 1896
Watson, G. N., Cuyahoga county Medical Society.....Cleveland, 1892
WEAVER, J. M , Montgomery county Medical Soc.....Dayton, 1865
Weber, Wm. C., Cuyahoga county Medical Society.....Cleveland, 1889
Webster, J. V., Belmont county Medical Society.....Flushing, 1890
Weed, Theo. A..... .....Cleveland, 1880
Welch, Absalom J., Fayette county Medical Soc.....Mt. Sterling, 1890
Wenner, R. J., Cleveland Medical Society .....Cleveland, 1896
Wenning, W. H., Academy of Medicine.....Cincinnati, 1892
West, T. J., Northwestern. Ohio Med. Ass'n ....Tiffin, 1875
West, J. P., Belmont county Medical Society.....Bellaire, 1892
Whelan, Ray E., Mahoning county Medical Soc ...Youngstown, 1897
Whittaker, J. F., Jefferson county Medical Soc.. Bloomingdale, 1892
Whitaker, H. W., Central Ohio Med. Soc.....Columbus, 1895
Whittaker, John T., Academy of Medicine..... Cincinnati, 1871

White, Wilford, Cleveland Medical Society.. .....Ravenna, 1897
Whitmer, J. E.....Millersburg, 1892
White, G. M., Academy of Medicine..... Columbus, 1888
Wilcox, S. S., Academy of Medicine.....Columbus, 1895
Wilson, D. C..... .....Ironton, 1872
Wilson, E. J..... .....Columbus, 1895
Wilson, J. L., Highland county, Medical Soc.....Greenfield, 1871
Wilson, C. H., Pike county Medical Society.....Idaho, 1895
WILLSON, WM. H., Adams county.....Greenfield, 1865
Williams, Brady O., E. O. Medical Society .....Martin's Ferry, 1691
Williams, W. E., Hempstead Academy of Medicine.....Jackson, 1895
Willard, G. P., Northwestern Ohio Med. Ass'n.....Tiffin, 1875
Williamson, A. M., Montgomery county Medical Soc ...Dayton, 1892
Williams, T. B., Cuyahoga county Medical Society.. ..Cleveland, 1886
Winders, Frank, Northwestern Ohio Med. Soc..... Columbus, 1896
Wirth, R., Academy of Medicine ....Columbus, 1886
Wirt, Wm. E. Cuyahoga county Medical Society.....Cleveland, 1891
Wiseman, Osbourne M., Muskingum county, M. S ...Zanesville, 1894
Withrow, J. M., Academy of Medicine .....Cincinnati, 1892
Wolfe, A. C., Academy of Medicine..... .....Columbus, 1896
Wood, John S..... .....Cleveland, Collinwood, 1880
Wood, W. H., Jefferson county Medical Society.....Smithfield, 1892
WOODS, JOS. T., Toledo, M. A..... .....Toledo, 1862
Woods, Elizabeth, Toledo M. A.....Toledo, 1892
Woodruff, E. W..... .....Columbus, 1895
Woodruff, L., C. O. Medical Society..... .....Alton, 1867
Woodbridge, John E., Mahoning county Med. Soc ...Cleveland, 1886
Woodworth, W. H .....Delaware, 1895
Wright, S. St. J., Summit county Medical Society....Tallmadge, 1880
Wright, J. A., Northwestern Ohio Med. Ass'n .....Toledo, 1892
Wright, Thos. M., Miami county Medical Society .....Troy, 1891
Wright, John H .....New Lexington, 1894
Wright, John W .. ..Columbus, 1885
Wylie, J. L., Brown county Medical Society.....Ripley, 1872
Yarnall, F. H., Hildreth Dist. Medical Society.....W. Lafayette, 1892
Yingling, G. S., Northwestern Ohio Med. Ass'n.....Tiffin, 1892
Yocum, L. A., Wayne county Medical Society..... .....Wooster, 1897
Young, D. Howard, Erie county Medical Society .....Chicago, 1892
Zenner, Philip, Academy of Medicine.....Cincinnati, 1882
Zinke, E. G., Academy of Medicine .....Cincinnati, 1892
Zimmerman, H. A.....Youngstown, 1892
Zopfi, W. J., Hancock county Medical Society.....Findlay, 1891

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CAPITALIZED: Life members.

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Heaton, Townsend.

Ada—
Patrick, O. H.

Adelphi—
Potter, Nathan.

Akron—
Boyd, James P.
Cleaver, J. V.
Conn, Eli.
Hoover, Albert.
Jackson, T. W.
Jacobs, Harold H.
Jacobs, W. C.
Lee, J. L.
Taggart, H. D.

Alliance—
Hoover, Collins, M.

Alton—
Norris, Thos. B.
Woodruff, L.

Archbald—
Murbach, Andrew J.

Arnheim—
Kautz, J. W.

Ashland—
Cowan F.

Ashtabula—
Battles, Mary M.
Case, Freeman D.
Flower, W. R.

Athens—
Dunlap, C. O.

Baltic—
Metzler, Abraham S.

Barnesville—
Ely, J S.
Judkins, Jas. A.

Batesville—
Rosengrant, Thos. S.

Beaver—
Brown, E. O. S.

Bell—
Roberds, T. W.

Bellaire—
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Huston, W. O.
Kerns, J. F.
McClellan, J. S.
Piper, Wm.
West, J. P.

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Phillips, W. S.

Bellefontaine—
FULLER, S. W.
Hamer, W. W.
Pratt, L. C.

Belmont—
Schooley, Lindley.

Benton—
Carson, Frank D.

Beverly—
Adair, Samuel G.

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Holuren, G. W.
Keller, B. T.
Bloomingdale—
Whittaker, J. F.
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Telfair, Geo. M.
Bridgeport—
Howells, James Owen.
Brooklyn, O.—
Linden, W. E.
Bryan—
Riggs, J. M.
Bucyrus—
Bland. J.
Chesney, John A.
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Fitzsimmons, J. F.
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Denman, Wm. C.
Cadiz—
McGavren, Samuel B.
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Vorhies, Elmer E.
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Brayton, Asa.
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Nau, J. G.
Castalia—
Storey, Wm.
Cedarville—
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Celina—
Sager, Jos.
Chardon—
Pomeroy, Frank S.
Chatham Centre—
Moody, Milo M.
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Young, D. Howard.
Chillicothe—
Barnes, T. S.
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Hall, Willard A.
Hughey, J. W.
Lash, Josiah W.
Leslie, J. M.
Church Hill—
Stewart, Thomas H.
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Allen, Geo. N.
Allen, S. E.
Armstrong, C. L.
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Bange, Theo.
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Brohl, Gust.
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Everts, Orpheus.
Fels, Geo. W.
Fisher, P.
Fitzpatrick, T. V.
Fletcher, Mordecai H.
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Fogel, L. J.
Forcheimer, F.
French, Jas. M.
Goode, B. P.
Gores, F. C.
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Hillkowitz, Wm.
Hinckley, H. D.
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Hoppe, H. H.
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Jones. Geo. E.
Joseph, Leopold.

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Judkins. C. P.
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Keck, Peter A.
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Koehler, Max.
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Lyle, Benj. F.
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Osborn, Mary E.
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Porter, W. D.
Ransohoff, Joseph.
Ravogli, Augustus.
REAMY, THAD A.
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Reemelin, R. H.
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Ricketts, Edwin.
Rosenfeld, A.
Sattler, Robert.
Schwab, Louis.
Schwab, Emmanuel.
Seeley, W. W.
Sittel, Theo.
Shaw, Wm. E.
Shaller, John M.
Shields, E. H.
Speidel, C. G. E.
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Stark, Sigmar.
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Tangeman, C. W.
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Thrasher, A. B.
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Whittaker, John T.
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Zenner, Phillip.
Zinke, E. G.

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Row, Geo. T.

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Hous, Geo. W.

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Brocket, A. J.
Bruner, Wm. E.
Bunts, Frank E.
Butler, Geo. O.
Campbell, Oscar B.
Carpenter, E. G.
Chadwick, Leroy S.
Clapp, Harold T.
Clark, Frank S.
Cook, J. E.
Corlett, Wm. T.
Crile, Geo. W.
Cushing, Edward F.
CUSHING, H. K.
Dutton, C. F.
Farnsworth, G. B.
Feil, G. H.
Foshay, P. M.
Fraser, J. M.
Goetz, F. E.
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Hamann, C. H.
Hawley, Edwin P.
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Herrick, H. B.
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Holliday, Benj. W.
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Humiston, Wm. H.

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Leick, G. F.
Lincoln, William.
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Lowman, J. H.
Lucas, V. C.
McGee, John B.
Martin, Thos.
Milliken, B. L.
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Nungesser, J. J.
Ohlmacher, A. P.
Oster, L. W.
Perkins, D. S.
Peskind, Arnold.
Quirk, Howard W.
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Robb, Hunter.
Rogers, H. W.
Rosenwasser, M.
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Sager, B. E.
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Scott, N. Stone.
Scott, X. C.
Sherman, H. G.
Sipher, J. N.
Skeel, R. E.
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Smith, C. W.
Smith, Frederick K.
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Spurney, A. F.
Straight, Howard S.
Stevenson, George W.
Sykora, J.
Taylor, Fred C.
Towslee, Lillian G.
Tuckerman, L. B.
Upson, Henry S.
Upson, Geo. D.
Watson, G. N.
Weber, Wm. C.
Weed, Theo. A.
Wenner, R. J.
Williams, T. B.
Wirt, Wm. E.
Wood, John S.
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Woodbridge, John E.
Coalton—
Plummer, Frank E.
Ray, J. H.
Colorado—
Potts, Chas. N.
Columbus—
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Barnhill, James U.
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Blackburn, M. E.
Blake, F. W.
Bleile, A. M.
Bowen, A. H.
Brown, J. E.
Burrows, S. S.
Butler, Geo. W.
Clark, C. F.
Clouse, Geo. M.
Cole, Wm. N.
Coleman, N. R.
Cooper, Albert.
Cooperrider, C. A.
Deuschle, W. D.
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Dixon, M. F.
Dunham, J. M.
Emerick, E. J.
Evans, A. E.
Fraker, H. C.
Fullerton, Erskine B.
Gay, N.
Gilliam, D. Tod.
Guerin, Z. F.
Hamilton, W. D.
Hamilton, C. S.
HAMILTON, J. W.
Harper, E. A.
Hendrixson, Hugh.
Homes, W. W.
Hoover, Thos. C.
Ireton, E. C.
Johnston, Alice M.
JONES, T. W.
Kahn, L.
KINSMAN, D. N.
LANDON, C. P.
Lawrence, F. F.
Lawrence, J. C.
LOVING, STARLING.
Marshall, G. M.
Means, Chas. S.

Columbus—
Means, W. J.
Moore, D. L.
Moore, H. M. W.
Neil, Alexander.
Obitz, N.
Overly, John E.
Probst, C. O.
Rankin, Theodore W.
*Reed, R. Harvey.
Richardson, Alonzo B.
Rogers, W. K.
Rowles, W. T.
Scatterday, W. F.
Schueller, J. B.
Sharp, Amos W.
Stein, G. S.
Stillman, F. L.
Stockton, George.
Taylor, Clovis M.
Wagenhals, F. W.
Warner, Frank
Wardlow, Yeatman.
Waters, Geo. M.
Whitaker, H. W.
White, G. M.
Wilcox, S. S.
Wilson, E. J.
Winders, Frank.
Wirth, R.
Wolfe, A. C.
Woodruff, E. W.
Wright, John W.

Columbus Grove—
Morris, Joseph.
Morris, Frank.

Congress—
Warner, C. J.

Conneaut—
Merriam, E. D.
Ward, Wadsworth A.

Cope—
Cope, E. C.

Copley—
Chapman, Bryon.

Corning—
Callinan, D. F.

Crestline—
Trimble, C. E.

Cuyahoga Falls—
Hough Wayland, S.
Howard, A. B.

Dalton—
Haney, Josiah C.

Dupont—
Bird, Edw. H.
Hixon, M. M.

Deavertown—
Folk, Peter.

Defiance—
Potts, Chas. M.
Slocum, Chas. E.

Dean—
Sanders, Samuel.

Delaware—
Chidester, C. W.
Fowler, Silas W.
Hughes, D. E.
HYATT, E. H.
Leonard, W. W.
Woodworth, W. H.

Delphos—
Wagner, Henry P.

Democracy—
Leonard, E. L.

Dennison—
Price, F. K.

Deshler—
Gehritt, T. M.

Dayton—
Adams, P. N.
Barrere, D. M.
Beck, John S.
Bonner, C. A.
Bonner, Horace.
Conklin, W. J.
Corbin, Lee.
Dolina, J, F.
Ellis, Samuel B.
Evans, Geo. B.
Goodhue, Geo.
Gray, Francis C.
Greene, D. W.
Humphrey, C. H.
Jenner, Henry G.
Jennings, Ellis.
Jewett, H. S.
Lichliter, David C.
Petitt, Richard R.
REEVE, J. C.
Reeve, J, C., Jr.
WEAVER, J. M.
Williamson, A. M.

Dayton Asylum—
Romspert, J. A.

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Dorsey, Jos. F.
Duncan's Falls—
Ward, Orin W.
East Liverpool—
Calhoun, W. M.
Hobbs, Wilbert A.
Ikirt, G. P.
Marshal, R. J.
East Toledo—
Hathaway, Harrison.
Eaton—
Lehman, C. W.
Eldorado—
Davisson, J. Alexander.
Elgin—
Clay, W. P.
Elyria—
McLean, W. F.
Maynard, O. T.
Fayette—
Backus, L. C.
Fayetteville—
Love, Ephriam W.
Findlay—
Baker, J. P.
Entrekin, F. W.
Hurd, A.
Kimmeli, J. A.
Martin, John C.
Zopfi, W. J.
Five Mile—
Sheldon, S. B.
Flushing—
Hobson, John A.
Webster, J. V.
Forest—
STAUSELL, J. A.
Fostoria—
Hoege, G. L.
Franklin—
Death, H. J.
Evans, Otho.
Fredericksburg—
Martin, Jas.
Shea, Daniel P.
Fredericktown—
Pennell, W. W.
Potter, S. B.
Fremont—
BRINKERHOFF, D. H.
Caldwell, William.
Hillbish, Fred. S.
Reif, Chas. F.
Fremont—
Stamm, M.
STILLWELL, THOS.
Fultonham—
Axline, Chas. Z.
VANNATA, E.
Galion—
Kelly, H. R.
Ridgeway, N. B.
Gallipolis—
Alcorn, E. G.
Alcorn, John B.
Rutter, H. C.
Georgetown—
Ellsberry, A. M.
GORDON, T. W.
Marshall, R. J.
Stephenson, Y.
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Brown, J. A.
Gibsonburg—
Church, Walter F.
Ervin, N. B.
Gilboa—
Mathias, A. C.
Gloucester—
Crawford, A. J.
Gomer—
JONES, R. E.
Granville—
LINNETT, E.
Greenfield—
Wilson, J. L.
WILLSON, WM. H.
Greenford—
Hulin, O. W.
Hamilton—
Jacobs, M. M.
Milliken, Dan.
Harbor—
Aldrich, Daniel B.
Dorman, H. W.
Harrisville—
Colville, George H.
Harveysburg—
VANDERVOORT, J. W.
Haydenville—
Allen, C. O.
Hayesvill—
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Lebanon—
Blair, B. H.
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SCOVILLE, S. S.
Stephens, E. B.
Stevens, E. S.
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Vorhes, B. C.
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Smith, H. H.
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Wall, J. L.
Mansfield—
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Hart, Samuel.
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Clark, John H.
Medina—
Murray, Langdon S.
Melmore—
Steel, Rob't G.
Melville—
Hancock, W. D.
Miamisburg—
Judy, C. L.
Middletown—
Corson, O. M.
Dickey, Thos. A.
Milford—
Belt, R. C.
Curry, Frank C.
Milford Centre—
Boylan, A.
Millersburg—
Bigham, J. G.
Crump, A. A., Jr.
Olmstead, D. S.
Whitmer, J. E.
Minster—
Dine, C. L.
Monroe—
Macready, James.
Montrose—
Nash, E. King.
Morrow—
Conden, John F.
MOUNTS, J. L.
Mt. Gilead—
Griffis, F. C.
Mt. Sterling—
Collins, Edgar F.
Leach, Sherman.
Welch, Absolom J.
Mt. Vernon—
Armentrout, Lyman W.
Larimore, F. C.
Russell, John E.
Scott, B. B.
Napoleon—
Harrison, E. B.
Maerker, A. E. H
Nevada—
Souder, R. L.
Neville—
HILL, N. S.
Newark—
Hatch, Chas. A.
Rank, W. G.
Smith, D. M.
Stinson, Chas. H.
New Burlington—
Sewell, S. G.
New Carlisle—
Davis Ben.
STOCKSTILL, J. N.
New Comerstown—
Beers, A. M.
New Dover—
Vigor, F. A.
New Holland—
May, John B.
New Hope—
Bivans, W. A.
New Lexington—
McDougal John G.
Richards, A.
Wright, John R.
New Lisbon—
Marquis, Thos. B.
New Philadelphia—
Blickensderfer, Jos.
Fox, J. F.
Hendershot, B. C.
McLean, J. T.
Smith, J. M.
Newport—
Gale, Geo. T.
New Vienna—
Conard, George R.
Trimble, R. T.
New Albany—
Ranny, Sylvester, W.

North Amherst—
Davison, John F.
North Baltimore—
Archer, J. R.
Henry A. G.
North Benton—
Miller, Delbert J.
North Jackson—
Faucett, R. C.
North Lewisburgh—
Thompson, C. E.
Norwich—
Geyer, Jos. L.
Nottingham—
Jenks, Wm. O.
Oak Hill—
Hughes, E. E.
Oberlin—
Noble, Chas. D.
Omega—
Ray, J. B.
Orrville—
Blankenhorn, H.
Osborn—
Marquart, Oscar M.
Ottawa—
Beardsley, C. E.
Owensville—
Combs, John S.
Oxford—
Cook, G. F.
Painesville—
House, Chas. F.
Merriman, D. J.
Paintersville—
Rouse, William L.
Patriot—
Eskins, Jehu.
Pennville—
Holcomb, Leroy S.
Perrysburg—
Hamilton, Horatio A.
Rheinfrank, J. H.
Rheinfrank, W. H.
Piqua—
Tydings, O.
Plain City—
Jenkins, M. J.
Mattoon, F. N.
Pomeroy—
Ackley, George B.
Hoff, Jos. W.
Poplar—
Van Nette, Wesley.
Port Clinton—
De La Barre, Paul.
Port Jefferson—
Miller, John F.
Portland Station—
Hoge, W. D.
Portsmouth—
Allard, Lorenzo D.
Halderman, S. S.
Kline, P. J.
Murphy, C. F.
Rardin, Joseph S.
Titus, A.
Powhattan Point—
Boone, Jos. S.
Put-in Bay—
Sears, O. T.
Qualey—
Gage, Rawson, S.
Ravenna—
Smith, Wm. G.
Spiers, H. H.
Waggoner, Joseph.
White, Wilford.
Ripley—
Dixon, W. A.
Francis, A. W.
Wylie, J. L.
Rushville—
Lewis, W. C.
Russell—
Granger, Francis M.
Sabina—
Lightner, S. B.
Salem—
Calvin, J. H.
Salineville—
Blazer, H. E.
Lindsay, J. A.
Sandusky—
Graefe, Wm.
Graefe, Chas.
Haynes, J. T.
Heard, Eugene N.
Heiter, Carl.
Merz, Chas. H.
Stanley, E.
Scio—
SNYDER, D. J.
Shadeville—
Blake, Wm. H.

Shanesville—
Miller, A. T.
Shelby—
Bricker, W. R.
Myers, I. A.
Shreve—
Bertolette, Harry B.
Sidney—
Hussey, M. F.
LeFevre, Edwin.
Sharp, B. M.
Silver, D. R.
Smithfield—
Wood, W. H.
Somerset—
Hayes, J. D.
South Charleston—
Collins, Milton H.
South Salem—
Cox, J. M.
Sparta—
Morehouse, G. W.
Springfield—
Buckingham, John M.
Carrol, Thos. E.
Hall, Willis W.
KAY, ISAAC.
Myers, Noah.
Myers, J. E.
Nelson, J. W.
Niles, L. E.
ROGERS, J. H.
Titlow, Benatta D.
Stony Ridge—
Noble, Herbert E.
St. Clairsville—
Hewetson, Alex. H.
Thompson, W. E.
St. Henry's—
Mory, J. J.
St. Mary's—
Longsworth, M. J.
Noble, N. T.
Startle—
Rea, E. H.
Strasburg—
Schutzbach, J. C.
Steubenville—
Collins, John W.
Floyd, J. C. M.
McCollough, Jos. A.
PEARCE, ENOCH.
Sulphur Springs—
Bevington, H. S.
Swanton—
Lathrop, Arthur B.
Scott, Wm. Alfred.
Thornville—
Clemson, G. W.
Tiffin—
Benner, C. T.
Gibbon, H. B.
Keller, Thos. F.
Leahy, Maurice.
McCollum, E. J.
West, T. J.
Willard, G. P.
Yingling, G. S.
Tippecanoe City—
Hartman, S. D.
Tiro—
Guiss, W. E.
Toledo—
Becker, Bernard.
Beckwith, Seth W.
Bessey, J. Mortimer.
Bodman, Lewis H.
Bond, John W.
Brand, Walter W.
Brigham, O. S.
Chapman, Wm. C.
Coldham, Wm. W.
Collamore, Geo. A.
Cosgrove, Thos.
Craver, S. Belle.
Curry, John H.
DeVilbiss, Allen.
Donnelly, James.
Duncan, James A.
Faber, Chas. A.
Fella, F. J.
Fisher, A. W.
Fisher, A. H.
FORBES, S. F.
Gardiner, W. G.
Gifford, Wm. R.
Gillette, Wm. J.
Hasencamp, Oscar.
Haynes, J. Purcell.
Heidrick, Louis W.
Hollister, Geo. A.
Hubbard, Thomas.
Jones, Wm. A.
Kirkley, Cyrus A.
Kitchen, Francis A.
Landman, Otto.
Lawless, James T.
McVety, A. F.

Toledo—
Mills, C. H.
Newton, C. W.
North, John.
Peter, Robert.
Pugh, Frank H.
Reed, Calvin F.
Reinhart, James C.
Root, H. A.
Roulet, Chas.
Schnetzler H. Marcus.
Smith, Chas. N.
Snyder, Walter H.
Stewart, Wm. D.
Thorn, S. S.
Tobey, Henry A.
Todd, Fred A.
Tracy, James L.
Van Pelt, Chas. L.
WOODS, JOS. T.
Woods, Elizabeth.
Wright, J. A.

Toronto—
Collins, B. F.

Trotwood—
Marshall, W. C.

Troy—
Wright, Thos. M.

Tuscarawas—
Russe[illegible], E. S.

Upper Sandusky—
Sampson, G. W.

Urbana—
Henderson, Robert.
Mosgrove, J. M.

Urichsville—
Groves, J. E.
Hewetson, H. L.
Thompson, S. R.

VanWert—
Hines, J. Arthur.
McGavren, Geo. W.
Morgan, R. J.

Vaughnsville—
McKinley, E.

Vermillion—
Hughes, F. N.

Versailles—
Fackler, John E.

Wadsworth—
LYMAN, C. N.

Walnut Creek—
Stucky, J. G.

Wapakoneta—
Getzloff, B.

Warren—
HARMON, JULIAN.
Harmon, J. D.
Sabin, Thomas M.
Ward, Clarence S.

Warrensburg—
McIntire, Wm.

Washington C. H.—
Boggess, E. M.
Howell, J. Morton.
Ireland, W. E.
Ireland, S. A.

Waterford—
Hayward, E. T.

Watertown—
Bohl, John, Sr.

Waterville—
Downs, Samuel.

Wauseon—
Hartman, Geo. W.

Waverly—
Andre, Orrin C.
Caldwell, John L.

Waynesfield—
Lusk, S. B.

Waynesville—
Oglesbee, Wm. E.

Webster—
Ballinger, J. B.

West Cairo—
Henderson, Geo. W.

West Carlisle—
Edwards, R. C.

West Carrollton—
Krause, L. S.

West Lafayette—
Yarnell, F. H.

West Liberty—
LEONARD, B. B.

West Milton—
Jennings, Gainor.

West Minster—
Creps, Adolphus H.

Weston—
Hill, Wm. W.

West Union—
Bunn, Jas. W.

Williamsburg—
Redrow, I.

Wilmington—
Quinn, Allen T.

Winesburg—
Shalliott, Peter.
Withamsville—
Bennett, C. A.
Wooster—
Hunt, A. H.
Robinson, James D.
Todd, J. H.
Yocum, L. A.
Worthington—
Johnson, O.
Johnson, Fred. L.
Xenia—
Brundage, L. A.
Galloway, C. M.
Galloway, W. A.
Messenger, A. C.
Prior, Amelia J.
Youngstown—
Buechner, W. L.
Clark, Ida.
Clark, Myron S.
Youngstown—
Cone, J. E.
McCurdy, John.
Whelan, Ray E.
Zimmerman, H. A.
Zanesville—
Bell, A. E.
Brush, Edmund C.
Crider, Chas. L.
Crossland, Jeff C.
Culbertson, Louis Rogers
Fassig, J. M.
Haldeman, John S.
Holston, J. G. F.
Lenhart, Charles M.
Melick, Wm. A.
Patrick, Nathan E.
Rambo, Cyrus M.
Sutton H. T.
Templeton, A. M.
Templeton, B. F.
Wiseman, Osbourne M.

ROLL OF

NON-RESIDENT PERMANENT MEMBERS.

Elisha Griswold.....Sharon, Pa.
C. E. Kurtz, 4460 Berkely Ave .....Chicago, Ills.
W. E. Rice.....Tuscola, Ills.
John M. Goodson.....Sterling, Kansas.
H. B. Nunemacker, 44th and Market Sts.....Philadelphia, Pa.
James L. Williams.....Indianapolis, Ind.
C. T. Murphy.....New York, N. Y.
Noble P. Barnes, 611 Maryland Ave., N. W.....Washington, D. C.
S. L. McCurdy.....Pittsburg, Pa.
John C. Graham.....Denver, Colo.

ROLL OF

HONORARY MEMBERS.

Robert Bartholow, M. D.....Philadelphia, Pa., 1879
James F. Hibbard, M. D.....Richmond, Ind., 1871
E. W. Jenks, M. D.....Detroit, Mich., 1875
John Kerr, M. D.....Canton, China, 1875
N. Senn, Ph. D., M. D., A. M.....Chicago, 1890
Victor A. Vaughan, M. D.....Ann Arbor, Mich., 1889
Donald Maclean, M. D.....Detroit, Mich., 1894
Hunter Robb, M. D. (Permanent Member, 1897).....Cleveland, 1894
P. Beeman, M. D.....Sidney, 1872
J. C. Blackburn, M. D.....Covington, Ky., 1857
M. H. Harding, M. D.....Lawrenceburg, Ind., 1854
R. E. Naughton, M. D.....Richmond, Ind., 1863
E. L. Hill, M. D.....Oxford, 1856
J. M. Kitchen, M. D.....Indianapolis, Ind., 1866
W. B. Lyons, A. M., M. D.....Huntington, Ind., 1866
H. O. Marcy, A. M., M. D.....Boston, Mass., 1897
J. F. Noyes, M. D.....Detroit, Mich., 1875
E. D. Safford, M. D.....Parkersburg, W. Va., 1870
J. M. Stevenson, M. D.....Pittsburg, Pa., 1866
R. S. Sutton, M. D.....Pittsburg, Pa., 1884
Judson Deland, M. D.....Philadelphia, Pa., 1895
Capt. James E. Pilcher, A. M., M. D.....U. S. A., 1896

ROLL OF

DELEGATES FROM LOCAL MEDICAL SOCIETIES.

George D. Bollard, Ashtabula, Lake and Geauga.....Jefferson.
D. J. Snyder, E. O. M. A.....Scio.
J. E. Cone, Mahoning county .....Youngstown.
W. R. Clark, E. O. M. A .....East Liverpool.
C. S. Chamberlain, Trumbull county .....Kinsman.
R. E. Whelan, Mahoning county .....Youngstown.
A. D. James, Morrow county .....Mt. Gilead.
J. I. King, North Central Ohio .....Martel.
J. C. Culbertson, Academy of Medicine.....Cincinnati.
H. S. Green, Morrow county ..... Cardington.
D. H. Brinkerhof, Sandusky county.....Sandusky.
A. H. McCullough, Mansfield Academy..... ..... Mansfield.
E. F. Wilson, Columbus Academy..... Columbus.
J. O. Howells, E. O. M. A..... ..... Bridgeport.
J. F. Purviance, E. O. M. A ..... Steubenville.
H. E. Blazer, E. O. M. A..... Salineville.
Frederick J. Smith, Cuyahoga county.....
John Bohl, Sr., Washington county .....Marietta.

ROLL OF DELEGATES

TO

AMERICAN MEDICAL ASSOCIATION, 1897.

R. Harvey Reed, M. D. ..... Columbus.
A. F. House, M. D. ..... Cleveland.
W. H. Huniston, M. D. ..... Cleveland.
August Rhu, M. D. ..... Marion.
M. Rosenwasser, M. D. ..... Cleveland.
N. P. Davidson, M. D. ..... Hilliard.
Geo. E. Malsbary, M. D. ..... Cincinnati.
R. B. Hall, M. D. ..... "
W. H. Woodward, M. D. ..... Delaware.
P. Max. Foshay, M. D. ..... Cleveland.
H. S. Straight, M. D. ..... Cleveland.
Chas. Graefe, M. D. ..... Sandusky.
W. J. Means, A. M., M. D. ..... Columbus.
S. S. Thorn, M. D. ..... Toledo.
A. P. Baker, M. D. ..... Cleveland.
John E. Russell, M. D. ..... Mt. Vernon.
J. W. Barnhill, M. D. ..... Columbus.
G. S. Peck, M. D. ..... Youngstown.
R. E. Whelan, M. D. ..... "
O. Hazencamp, M. D. ..... Toledo.
J. Q. King, M. D. ..... Martel.
C. L. Fox, M. D. ..... Ringsville.
Starling Loving, M. D. ..... Columbus.
N. R. Coleman, M. D. ..... "
F. F. Lawrence, M. D. ..... "
J. E. Cook, M. D. ..... Cleveland.
J. C. Hobson, M. D. ..... Cleveland.
E. G. Alcorn ..... Gallipolis.
J. E. Woodbridge, M. D. ..... Cleveland.
G. W. Boerstler, M. D. ..... Lancaster.

REGISTRATION

AT

THE FIFTY-SECOND ANNUAL MEETING.

Ralph J. Werner.....Cleveland.
Eugene S. Carpenter.....Cleveland.
O. K. Campbell.....Cleveland.
J. A. Kimmell.....Findlay.
John C. Oliver.....Cincinnati.
Benj. H. Holliday.....Cleveland.
Wm. Lincoln.....Cleveland.
J. P. Sawyer.....Cleveland.
Byron Chapman.....Copley.
John G. Spenser.....Cleveland.
Geo. Clark Russell.....Cleveland.
Marcus Rosenwasser.....Cleveland.
C. F. Clark.....Columbus.
C. F. Hoover.....Cleveland.
Jos. Sykora.....Cleveland.
Geo. W. Crile.....Cleveland.
J. J. Nungesser.....Cleveland.
W. H. Woodworth.....Delaware.
W. P. Davidson.....Hilliard.
J. W. Darrah.....Martin's Ferry.
Frank D. Carson.....Benton.
E. E. Hughes.....Oak Hill.
James Martin.....Fredericksburg.
D. J. Merriman.....Painesville.
Albert R. Baker.....Cleveland.
George E. Malsbary.....Cincinnati.
R. B. Hall.....Cincinnati.
August Rhu.....Marion.
F. W. Langdon.....Cincinnati.
P. Max Foshay.....Cleveland.
R. D. Reynolds.....Cleveland.
D. H. Young.....Chicago.

A. J. Brockett.....Cleveland.
Charles W. Smith.....Cleveland.
J. C. Schutzbach.....Strasburg.
Wm. Thos. Corlett.....Cleveland.
J. W. Bond.....Toledo.
J. A. Davisson.....El Dorado.
W. H. Humiston.....Cleveland.
Leon B. Santee.....Marlborough.
Jos. C. Cook.....Cleveland.
H. M. W. Moore.....Columbus.
M. Stamm.....Fremont.
D. J. Miller.....North Benton.
Carl A. Hamann.....Cleveland.
J. C. Lawrence.....Columbus.
Mary J. Finley.....Mansfield.
A. F. House.....Cleveland.
R. G. Steele.....Melmore.
Jas. A. Duncan.....Toledo.
F. E. Bunts.....Cleveland.
Wm. E. Wirt.....Cleveland.
Harold T. Clapp.....Cleveland.
F. L. Henry.....Kansas.
C. S. Chamberlain.....Kinsman.
W. W. Holliday.....Cleveland.
G. A. Collamore.....Toledo.
C. B. Parker.....Cleveland.
H. J. Herrick.....Cleveland.
O. W. Hulin.....Greenford.
W. A. Knowlton.....Cleveland.
Dudley P. Allen.....Cleveland.
D. J. Snyder.....Scio.
W. E. Lower.....Cleveland.
C. L. Fox.....Kingsville.
G. M. Brooke.....Elsworth.
W. A. Lindsay.....Salineville.
C. S. Hiddleson.....Atwater.
Chas. C. Berlin.....Wapakoneta.
Geo. N. Watson.....Cleveland.
W. W. Pennell.....Fredericktown.
H. Blankenhorn.....Orrville.
J. P. Sawyer.....Cleveland.
J. W. Irwin.....Magnetic Springs.
J. A. Lindsay.....Salineville.

A. J. Brockett.....Cleveland.
Charles Mantey.....Minerva.
R. C. Fausett.....North Jackson.
J. M. Weaver.....Dayton.
Jos. Morris.....Columbus Grove.
G. L. Starr.....Hudson.
A. B. Lathrop.....Swanton.
Charles Graefe.....Sandusky.
John A. Thompson.....Cincinnati.
B. Chapman.....Copley.
John McCurdy.....Youngstown.
J. E. Cone.....Youngstown.
E. L. Leonard.....Democracy.
Thos. H. Stewart.....Church Hill.
G I. Lower.....Port Washington.
J. F. Hudson.....Canton.
D. J. Olmstead.....Millersburg.
Alex Neil.....Columbus.
Wm. S. King.....Ashtabula.
H. A. Rodebaugh.....Marysville.
C. N. Smith.....Toledo.
W. C. Weber.....Cleveland.
Geo. M. Clouse.....Columbus.
Geo. T. Row.....Circleville.
James M. French.....Cincinnati.
D. B. Aldrich.....Ashtabula.
O. Hasencamp.....Toledo.
Irene Hardy.....Massillon.
P. S. Greenamyer.....Orrville.
H. H. Spiers.....Ravenna.
Wm. Faher.....Rittman.
Edwin LeFevre.....Sidney.
L. Kemp.....Bucyrus.
J. B. Alcorn.....Gallipolis.
E. G. Alcorn.....Gallipolis.
W. P. Bennett.....Crestline.
Platt E. Beach.....Seville.
Chas. E. Trimble.....Crestline.
A. B. Campbell.....Canal Fulton.
T. Clarke Miller.....Massillon.
E. R. Spencer.....Doylestown.
Edward S. Stevens.....Lebanon.
Frederick C. Taylor.....Cleveland.

Frank Young.....Lorain.
E. Cameron.....Lorain.
A. N. Garver.....Lorain.
B. M. Tower.....Conneaut.
T. J. West.....Tiffin.
N. Stone Scott.....Cleveland.
Charles J. Aldrich.....Cleveland.
J. C. Culbertson.....Cincinnati.
R. V. Gamble.....New London.
L. S. Murray.....Medina.
F. D. Case.....Ashtabula.
L. E. Niles.....Springfield.
Julian Harmon.....Warren.
John S. Halderman.....Zanesville.
B. O. Williams.....Martin's Ferry.
M. G. Kolb.....Cleveland.
J. F. Purviance.....Steubenville.
J. F. Davidson.....North Amherst.
J. O. Howells.....Bridgeport.
Jos. Blickensdorfer.....New Philadelphia.
Thos. Hubbard.....Toledo.
W. H. Wood.....Smithfield.
F. C. Larimore.....Mt. Vernon.
Frank S. Clark.....Cleveland.
H. E. Blazer.....Salineville.
Jas. U. Barnhill.....Columbus.
C. F. Dutton.....Cleveland.
S. J. Wright.....Tallmadge.
S. S. Cox.....Lorain.
F. A. Russell.....Kent.
H. G. Sherman.....Cleveland.
R. E. Whelan.....Youngstown.
W. J. Means.....Columbus.
R. Harvey Reed.....Columbus.
H. C. Long.....Cleveland.
G. H. Colville.....Harrisville.
L. Woodruff.....Alton.
J. M. Garber.....Plymouth.
J. M. Ingersoll.....Cleveland.
T. B. Cable.....Pemberton.
W. W. Hamer.....Bellefontaine.
S. W. Fowler.....Delaware.
I. H. Brinkerhoff.....Fremont.

W. Estep Thompson ..... St. Clairsville.
A. H. Hewetson ..... St. Clairsville.
A. M. Bleile ..... Columbus.
C. O. Probst ..... Columbus.
D. N. Kinsman ..... Columbus.
J. H. Rogers ..... Louisville.
Geo. Mitchell ..... Mansfield.
E. H. Hyatt ..... Delaware.
John S. Wood ..... Collinwood.
Baldwin B. Scott ..... Mt. Vernon.
W. C. Chapman ..... Toledo.
W. C. Bennett ..... Mt. Gilead.
H. S. Green ..... Cardington.
C. W. Lehman ..... Eaton.
A. D. James ..... Mt. Gilead.
Geo. D. Upson ..... Clevela nd
L. W. Oster ..... Cleveland.
F. L. Johnson ..... Worthington.
S. S. Bernstein ..... Cleveland.
J. Bohl, Sr ..... Watertown.
F. D. Bain ..... Kenton.
Geo. D. Ballard ..... Jefferson.
E. F. Wilson ..... Columbus.
J. M. Bessey ..... Toledo.
D. P. Chamberlain ..... Toledo.
J. P. DeWitt ..... Pierce.
J. Bland ..... Bucyrus.
J. B. McGee ..... Cleveland.
J. H. Belt ..... Cleveland.
Edward P. Morrow ..... Canton.
M. Stamm ..... Fremont.
A. P. Ohlmacher ..... Cleveland.
W. I. Wood ..... Medina.
C. W. Smith ..... Cleveland.
J. P. Esch ..... Huron.
J. M. Smith ..... New Philadelphia.
S. E. Kaestler ..... Cleveland.
J. A. Spence ..... Pittsburg, Pa.
F. M. Hughes ..... Sandusky.
G. G. Gardner ..... Doylestown.
A. E. Hersheiser ..... Wakeman.
Jessie Boggs ..... Cleveland.
J. E. Spenzer ..... Cleveland.

W. C. Jacobs.....Akron.
Lillian G. Towslee.....Cleveland.
J. D. Jones.....Cleveland.
E. J. Wilson.....Columbus.
A. H. Hunt.....Wooster.
J. R. Jameson.....Apple Creek.
L. A. Yocum.....Wooster.
Geo. J. Martz.....German.
D. W. Steiner.....Lima.
J. E. Whitman.....Millersburg.
J. E. Whitsey.....Ashtabula.
J. H. Seiler.....Akron.
J. E. Woodbridge.....Cleveland.

CHAPTER XV.

CONSTITUTION AND BY-LAWS

OF THE

OHIO STATE MEDICAL SOCIETY.

ADOPTED AT ZANESVILLE, MAY 16, 1894.

ARTICLE I.

TITLE.

The name of this Association shall be the "OHIO STATE MEDICAL SOCIETY."

ARTICLE II.

OBJECTS.

The objects of this Society shall be the advancement of medical knowledge; the elevation of professional character; the protection of the professional interests of its members; the promotion of all measures adapted to the relief of the suffering, the improvement of the health, and the protection of the lives of the community.

ARTICLE III.

MEMBERS.

SECTION 1. The Society shall consist of *permanent members*, *delegate members*, and *honorary members*. Permanent and delegate members only shall be competent to hold office or transact the legislative business of the Society, as hereinafter specified.

SEC. 2. Delegate members shall receive their appointments from auxiliary societies. Before admission to a seat they shall pay the regular dues for the year, and file with the Committee on Admission a certificate of delegation, signed by the President and Secretary of the auxiliary society which they represent. Should a delegate not become a permanent member by complying with the requirements of Sec. 3, Art. III., he shall only be entitled to a copy of the Transactions and the privileges of membership for the meeting to which he is accredited.

SEC. 3. All regularly graduated practitioners of medicine in the State of Ohio shall be eligible to permanent membership. Applicants shall be vouched for by two permanent members, or shall present a certificate of membership in an auxiliary society, signed by the President and Secretary of such society, and their election shall require a majority vote at a regular meeting, their eligibility having been reported upon favorably by the Committe on Admission.

Every applicant shall deposit with the Treasurer the sum of $3.00 as a membership fee, and the dues for the current year, if not previously paid, which sums shall be returned if his application is rejected.

SEC. 4. Members of an auxiliary society, upon the presentation of a certificate of membership, signed by the President and Secretary of such society, and complying with the provisions of Art. III., Sec. 3, shall be eligible to membership, although not in attendance on the meeting.

SEC. 5. The Society may elect eminent physicians, not residents of Ohio, as honorary members. They shall be exempt from payment of dues and assessments, and shall be presented with a copy of the Transactions.

SEC. 6. Members who have paid dues for thirty consecutive years shall be known as *life members*, and be exempt from dues and assessments.

SEC. 7. Members who are delinquent in dues or assessments shall not be entitled to a copy of the Transactions. The non-payment of dues for three years shall forfeit membership. The Treasurer shall include in his annual report the names of those who are delinquent for three years, but this list shall not be printed in the Transactions.

SEC. 8. The names of all permanent, delegate and honorary members shall be annually printed in the Transactions, in their respective classes.

ARTICLE IV.

AUXILIARY SOCIETIES.

SECTION 1. Any county or other local medical society in the State, whose Constitution recognizes the Code of Ethics of the American Medical Association, may become auxiliary to this Society, and shall be entitled to one delegate for every five members, and one additional for more than half that number.

SEC. 2. Every auxiliary society shall enforce the observance, by its members, of the Code of Ethics adopted by this Society.

SEC. 3. Any member of an auxiliary society, who is also a member of this Society, who shall feel aggrieved at the action of such auxiliary society in enforcing discipline, shall have the right to appeal to this Society.

SEC. 4. The Secretary of each auxiliary society, not less than one month preceding each annual meeting of this Society, shall make a full and correct catalogue, with post-office addresses, of its officers and members and transmit the same to the Secretary. If the name of a member is omitted from this catalogue that was contained in the last preceding catalogue, the reason for such omission must be given.

SEC. 5. In case of the death of any of its members, who are also members of this Society, it shall be the duty of the

Secretary of each auxiliary society to transmit to the Secretary of this Society a suitable obituary notice for publication.

ARTICLE V.

OFFICERS.

SECTION 1. The officers of this Society shall be a President, four Vice-Presidents, Secretary, Assistant Secretary, and Treasurer and Librarian.

SEC. 2. At the first session of each year the President shall appoint a committee of five, which shall present to the Society nominations for all elective officers except that of President. The officers shall be elected by a ballot vote of a majority of all the members present, and shall enter upon their duties at the close of the meeting at which they are elected, and shall serve one year, or until their successors are elected.

SEC. 3. All vacancies in office, occurring in the interim of the meetings, shall be filled by appointment by the President.

ARTICLE VI.

DUTIES OF OFFICERS.

SECTION 1. The President shall preside over the meetings, deliver an address, and perform such other duties as custom and parliamentary usage may require.

SEC. 2. The Vice-Presidents shall assist the President in the performance of his duties, and, in his absence, preside over the meetings, in the order of their seniority.

SEC. 3. The Secretary shall keep correct minutes of the proceedings of the Society, and furnish the same to the Committee on Publication, notify committees and society delegates of their appointments, take charge of all manuscripts, papers, etc., read at the various meetings, and transfer the same to the Committee on Publication. He shall give due notice of the annual meetings, and give official notice to all auxiliary societies of resolutions, etc., passed

by this Society that have reference to the said societies, and also notify them of the time for making their reports to this Society, and perform all other duties which the common usage of corporate bodies may require. His salary shall be one hundred and twenty-five dollars per annum.

SEC. 4. The Assistant Secretary shall assist the Secretary in the performance of his duties, as the latter may require, and act for him in his absence. His traveling and hotel expenses shall be borne by the Society.

SEC. 5. The Treasurer and Librarian shall receive all moneys due the Society, pay all bills countersigned by the Secretary, keeping an itemized account of all receipts and expenditures, with vouchers, and make a full report at each annual meeting. He shall have charge of all property belonging to the Society, the care of which is not otherwise provided for, keeping a complete catalogue of the same, and report the condition of this department at the annual meeting. He shall give bond for the faithful performance of his duties in the sum of $1,000, with two sureties, said bond to be approved by the Committee on Finance, and deposited with the Secretary. His salary shall be one hundred and twenty-five dollars per annum.

SEC. 6. The officers shall deliver all records, books, funds and other property belonging to their several offices, to their successors when the latter enter upon the discharge of their respective duties.

ARTICLE VII.

COMMITTEES.

The committees of this Society shall be Standing and Temporary. Standing committees are those whose duties continue from year to year. They shall each consist of five members, and, unless otherwise specified, shall be elected by the society, one member being elected each year. The Standing Committees shall be: Committees on Arrangements, Finance, Admission and Medical Societies, Ethics, Publication,

and Medical Legislation. Temporary Committees are those whose functions cease with the meeting at which they are appointed. They shall be appointed by the President as the necessity for their existence arises.

ARTICLE VIII.

DUTIES OF COMMITTEES.

SECTION 1. The Committee on Arrangements shall, if no sufficient reasons prevent, be mainly composed of members at the place where the next annual meeting is to be held. It shall provide suitable rooms and accommodations for the meeting, and, in all matters not otherwise provided for, superintend and protect the general interests of the Society. This Committee shall be appointed annually by the President.

SEC. 2. The Committee on Finance shall fix the amount of the yearly dues and special assessments, audit the account of the Treasurer, and have general charge of the monetary affairs of the Society.

SEC. 3. The Committee on Admission and Medical Societies shall examine and pass upon the qualifications of delegates and applicants for permanent membership, and the application for admission of auxiliary societies, and perform such other duties as may devolve upon it.

SEC. 4. The Committee on Ethics shall examine and report for the action of the Society, all cases of appeal from the auxiliary societies, and such other matters as may be referred to it by the Society. If any member or auxiliary society shall be charged, in writing, with any violation of the provisions of this Constitution and By-Laws, or with unprofessional conduct, a copy of such charges shall be furnished to him or its officers, and the accused and accuser cited to appear when the Committee shall proceed to hear the case, reserving its decision to be reported to the Society; except that the case of any member may be referred for adjudication to the auxiliary society of which he is a mem-

ber, and from the decision of the auxiliary society an appeal may be carried to this Society.

Reports from this Committee, when unanimous, shall be acted upon without debate.

Sec. 5. The Committee on Publication, of which the President and Secretary shall be members *ex officio*, shall examine all papers presented to the Society, and have printed in the Transactions such as it deems worthy of publication.

SEC. 6. The Committee on Legislation shall watch the course of State legislation on medical subjects, and take charge of such matters as shall be referred to it by the Society. All proposed legislation offered by any member of this Society, and all resolutions touching medical legislation, shall be referred to this Committee, which shall make a report thereon to this Society as soon as possible.

ARTICLE IX.

DELEGATES.

SECTION 1. The Delegates appointed by this Society to the American Medical Association, or other societies, shall report briefly, in writing, through their Chairman, any action of the societies to which they were respectively delegated, which, in their judgment, merits the attention of this Society.

ARTICLE X.

MEETINGS.

SECTION 1. The meetings of this Society shall be held annually, at such time and place as the Society may appoint: *Provided*, that special meetings may be called at any time by the President, on the written request of twenty-five members. Due notice of all the meetings shall be given by the Secretary, and in case of a special meeting, the object for calling said meeting shall be distinctly set forth in the notice.

SEC. 2. Twenty-five members shall constitute a quorum for the transaction of business.

ARTICLE XI.

CODE OF ETHICS.

The Society adopts, as a part of its regulations, the Code of Ethics of the American Medical Association.

ARTICLE XII.

AMENDMENTS.

Every proposal for amending the Constitution shall be made in writing; and if such an amendment receives a majority of four-fifths of the members present, it shall be adopted; but otherwise, the amendment shall lie over until the next meeting, when it may be adopted by a majority of two-thirds of the members present.

ARTICLE XIII.

Nothing in this Constitution shall be so construed as to deprive any one now a member of this Society of any rights or privileges held by him before the adoption of this Constitution.

BY-LAWS.

I.

ORDER OF BUSINESS.

1. The President, or in his absence, one of the Vice-Presidents, shall call to order, or, in case of the absence of all these officers, a Chairman shall be appointed *pro tempore*.
2. Reading of minutes. Report of the Committee of Arrangements (on first day).
3. President's address (afternoon of second day).
4. Election of officers (afternoon of second day).

5. Selection of a place and time for the next meeting (afternoon of second day).

6. Business which requires early consideration.

7. Reports of Standing Committees.

8. Reports from Delegates to the American Medical Association, and other Societies.

9. Written communications on medical subjects (papers).

10. Oral communications.

11. New business.

12. Unfinished and miscellaneous business.

13. Adjournment.

II.

In filling blanks, the longest time and the largest sum shall be put first.

III.

Any three members may call for the ayes and nays.

IV.

All questions of order, not especially provided for, shall be decided according to Cushing's Manual of Parliamentary Practice.

V.

Not to exceed ten minutes shall be allowed for the reading of any paper.

VI.

No paper shall occupy over thirty pages of the Transactions.

VII.

All reports, papers and addresses presented to this Society by its members are the property of the Society, and shall be referred, without motion and without recommendation, to the appropriate committee; and it shall be considered a misdemeanor for the author of any such report or paper to permit the same to be published without giving due credit to this Society.

VIII.

No speaker shall be allowed to speak a second time, on the same subject, without consent of the Society.

IX.

The time allowed each speaker shall not exceed ten minutes, except by general consent.

X.

The motion to adjourn, to lay on the table, or for the previous question, shall be decided without debate.

XI.

The motion for the previous questions, if decided in the negative, shall have no effect on the main question.

XII.

Any of these By-Laws may be suspended at any time by a three-fourths vote of the members present. Every proposed amendment must be offered in writing; if it receives a four-fifths vote of the members present, it shall be adopted; but otherwise it shall lie over until the next meeting, when it may be adopted by a majority of two-thirds of the members present.

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